APPENDIX K
DATA VALIDATION REPORTS

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Tissue samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August and October 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

Vista analyzed 28 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS samples collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and calculation verifications of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

IAG = Ion ratio exceeds acceptance limits
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. A summary of data validation qualifications and interpretations on data usability are provided in this section. More detailed discussions are provided in Section 2.0.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for MS/MSD recovery, MS/MSD precision, extracted internal standard (EIS) recovery, and/or ion abundance ratio. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as estimated values. The uncertainties that may occur from using estimated detections should be

considered during contamination assessment or evaluation of contaminant data against project action limits.

Recoveries within QSM and QPP project limits were reported for PFAS compounds in most MS/MSD analyses indicating accuracy goals were achieved in the tissue media with the following exceptions:

- The results for perfluorononanesulfonic acid (PFNS), perfluorodecane sulfonate (PFDS), and perfluorotridecanoic acid (PFTrDA) in sample LORNG_LMR_002_FT_FF_08032022 are qualified estimated due to low recoveries in the associated MS/MSD.
- The result for perfluorooctanesulfonic acid (PFOS) in sample LORNG_LT14_FT_SB_08052022 is qualified estimated due to a high recovery and RPD exceedance in the associated MS/MSD.
- The results for PFNS, PFDS, and PFTrDA in sample LORNG_LT14_FT_SB_08052022 are qualified estimated due to low recoveries and RPD exceedance in the associated MS/MSD.
- The results for N-methyl perfluorooctane sulfonamide (N-MeFOSA), PFDS, and PFTrDA in sample LORNG_NP_001_FT_BT_10052022 are qualified estimated due to low recoveries and RPD exceedance in the associated MS/MSD.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on EIS recovery. In accordance with QSM and QPP objectives EIS recovery limits are 50-150 percent. Target compound results associated with recoveries less than 50 percent are qualified estimated. Non-detect results associated with recoveries less than 20 percent are qualified rejected. Affected samples and associated qualified results are summarized in Table 3 with code RIS. Results qualified estimated (J/UJ) are considered usable as estimated values. Results qualified rejected (R) are considered unusable for project objectives.

The following ion ratios did not meet the acceptance criteria and the results are considered estimated:

- Perfluorododecanoic acid (PFDoA) in sample LORNG_LT05_FT_BB_08052022;
- Perfluoroundecanoic acid (PFUnA) in samples LORNG_LT14_FT_SB_08052022 and LORNG_LT05A_FT_BB_08062022; and
- PFDoA, perfluorononanoic acid (PFNA), and perfluorodecanoic acid (PFDA) in sample LORNG_WBGB_004_FT_BT_08032022

Of the 700 individual PFAS results reported for the tissue event, 50 results were qualified as rejected. This represents an overall data completeness of 92.9% for the tissue event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 MS/MSD

The MS/MSD percent recoveries associated with PFNS (67), PFDS (40/37), and PFTrDA (64/58) in sample LORNG_LMR_002_FT_FF_08032022 were less than the lower control limits. The reporting limits for PFNS, PFDS, and PFTrDA in sample LORNG_LMR_002_FT_FF_08032022 were qualified as estimated (UJ).

The MS/MSD percent recovery associated with PFOS in sample LORNG_LT14_FT_SB_08052022 was greater than the upper control limits (175). The MS/MSD relative percent difference (RPD) exceeded the QC acceptance limit (33). The result for PFOS in sample LORNG_LT14_FT_SB_08052022 was qualified as estimated (J).

The MS/MSD percent recoveries associated with PFNS (64/34), PFDS (52), and PFTrDA (55/64) in sample LORNG_LT14_FT_SB_08052022 were less than the lower control limits. The MS/MSD RPD for PFNS exceeded the QC acceptance limit (34). The reporting limits for PFNS, PFDS, and PFTrDA in sample LORNG_LT14_FT_SB_08052022 were qualified as estimated (UJ).

The MS/MSD percent recoveries associated with N-MeFOSA (59), PFDS (43/37), and PFTrDA (59/55) in sample LORNG_NP_001_FT_BT_10052022 were less than the lower control limits. The MS/MSD RPD for N-MeFOSA exceeded the QC acceptance limit (61). The reporting limits for N-MeFOSA, PFDS, and PFTrDA in sample LORNG_NP_001_FT_BT_10052022 were qualified as estimated (UJ).

2.1.2 Extracted Internal Standard Recovery

The extracted internal standard (EIS) percent recoveries associated with N-MeFOSA (20 – 27) and PFDoA and PFTrDA (32 - 38) in samples LORNG_LT02_FT_BT_08032022, LORNG_LT13A_FT_BT_08032022, and LORNG_LT18_FT_BT_08032022 were less than the lower QC acceptance limit of 50. EIS recoveries associated with PFTeDA (8.2 – 9.4) were less than the rejection limit of 20 percent in the associated samples. N-MeFOSA, PFDoA, and PFTrDA were not detected in samples LORNG_LT02_FT_BT_08032022, LORNG_LT13A_FT_BT_08032022, and LORNG_LT18_FT_BT_08032022 and reporting limits were qualified as estimated (UJ). Non-detect results for PFTeDA in samples LORNG_LT02_FT_BT_08032022, LORNG_LT13A_FT_BT_08032022, and LORNG_LT18_FT_BT_08032022 were qualified as rejected (R).

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. EIS percent recoveries ranged from 5.0 to 19 in affected samples. Results for N-MeFOSA in the following samples are considered unusable for project objectives:

LORNG_GB_003_FT_BT_08032022
LORNG_LMR_002_FT_FF_08032022
LORNG_LT1006_FT_BT_08022022
LORNG_LT1006A_FT_BT_08032022
LORNG_LT13_FT_BT_08022022
LORNG_LT14A_FT_BT_08032022
LORNG_LMR_001_FT_FF_08042022
LORNG_LT02_FT_FF_08042022
LORNG_LT05_FT_BB_08052022
LORNG_LT05A_FT_BB_08062022
LORNG_LT15_FT_BT_08042022
LORNG_LT16_FT_BT_08042022
LORNG_LT17_FT_BT_08042022
LORNG_LT17_FT_CC_08042022
LORNG_LT18_FT_SB_08052022
LORNG_LT19_FT_BT_08042022
LORNG_WBGB_004_FT_BT_08032022

Non-detect results for PFTeDA in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. EIS percent recoveries ranged from 3.0 to 11 in affected samples. Results for PFTeDA in the following samples are considered unusable for project objectives:

LORNG_GB_003_FT_BT_08032022
LORNG_LMR_001_FT_BT_08032022
LORNG_LMR_002_FT_FF_08032022
LORNG_LT1001_FT_BT_08022022
LORNG_LT1005_FT_BT_08022022
LORNG_LT1006_FT_BT_08022022
LORNG_LT1006A_FT_BT_08032022
LORNG_LT13_FT_BT_08022022
LORNG_LT14A_FT_BT_08032022

LORNG_LMR_001_FT_FF_08042022
LORNG_LT02_FT_FF_08042022
LORNG_LT05_FT_BB_08052022
LORNG_LT05A_FT_BB_08062022
LORNG_LT14_FT_BT_08042022
LORNG_LT14_FT_SB_08052022
LORNG_LT15_FT_BT_08042022
LORNG_LT16_FT_BT_08042022
LORNG_LT17_FT_BT_08042022
LORNG_LT17_FT_CC_08042022
LORNG_LT18_FT_SB_08052022
LORNG_LT19_FT_BT_08042022
LORNG_WBGB_004_FT_BT_08032022
LORNG_NP_001_FT_BT_10052022

Non-detect results for PFTrDA in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. EIS percent recoveries were 19 in affected samples. Results for PFTrDA in the following samples are considered unusable for project objectives, and non-detect results for PFDoA in samples LORNG_LT15_FT_BT_08042022 and LORNG_LT16_FT_BT_08042022 are considered unusable for project objectives:

LORNG_LT15_FT_BT_08042022
LORNG_LT16_FT_BT_08042022
LORNG_WBGB_004_FT_BT_08032022

The EIS percent recoveries associated with PFDoA and PFTrDA (27) and N-MeFOSA (44) in sample LORNG_LT05_FT_BT_ON_10042022 were less than the lower QC acceptance limit of 50. The EIS recovery associated with PFTeDA was less than the rejection limit of 20 (9). The reporting limits for N-MeFOSA, PFDoA, and PFTrDA in sample LORNG_LT05_FT_BT_ON_10042022 were qualified as estimated (UJ). The non-detect result for PFTeDA in sample LORNG_LT05_FT_BT_ON_10042022 was qualified as rejected (R).

The EIS recovery associated with PFDoA and PFTrDA (47) in sample LORNG_LT05_FT_BT_OFF_10042022 was less than the lower QC acceptance limit of 50. The recovery of PFTeDA was less than the rejection limit of 20 (14). The reporting limits for PFDoA and PFTrDA in sample LORNG_LT05_FT_BT_OFF_10042022 were qualified as estimated (UJ). The non-detect result for PFTeDA in sample LORNG_LT05_FT_BT_OFF_10042022 was qualified as rejected (R).

Positive and non-detect results for the following PFAS compounds were qualified estimated (J/UJ) in a subset of samples based on extracted internal standard percent recoveries less than the lower QC acceptance limit of 50 (21 – 49). Qualified results are considered usable as estimated values and are summarized in Table 3:

8:2 Fluorotelomer sulfonate (8:2 FTS)
N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)
N-MeFOSA
N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)

PFDS
PFDA
PFDoA
Perfluoroheptanesulfonic acid (PFHpS)
PFNS
PFNA
Perfluorooctane sulfonamide (PFOSA)
PFOS
PFTrDA
PFUnA

2.1.3 Compound Identification and Quantitation

The ion transition ratio was outside of the acceptance criteria for PFDoA in sample LORNG_LT05_FT_BB_08052022. Based on professional judgment the laboratory Q-qualified results were reported as estimated values (J) in the final data set.

The ion transition ratios were outside of the acceptance criteria for PFUnA in samples LORNG_LT14_FT_SB_08052022 and LORNG_LT05A_FT_BB_08062022. Based on professional judgment the laboratory Q-qualified results were reported as estimated values (J) in the final data set.

The ion transition ratios were outside of the acceptance criteria for PFDoA, PFNA, and PFDA in sample LORNG_WBGB_004_FT_BT_08032022. Based on professional judgment the laboratory Q-qualified results were reported as estimated values (J) in the final data set.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Amber Jones



January 17, 2023

Reviewed by: Julie Ricardi



March 14, 2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	LC0012
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
2208120	GB_003	LORNG_GB_003_FT_BT_08032022	2208120-01	8/3/2022	TA	N	25
	LMR_001	LORNG_LMR_001_FT_BT_08032022	2208120-02	8/3/2022	TA	N	25
	LMR_002	LORNG_LMR_002_FT_FF_08032022	2208120-03	8/3/2022	TA	N	25
	LORNG-LT-10-01	LORNG_LT1001_FT_BT_08022022	2208120-05	8/2/2022	TA	N	25
	LORNG-LT-10-05	LORNG_LT1005_FT_BT_08022022	2208120-06	8/2/2022	TA	N	25
	LORNG-LT-10-06	LORNG_LT1006_FT_BT_08022022	2208120-07	8/2/2022	TA	N	25
	LORNG-LT-10-06A	LORNG_LT1006A_FT_BT_08032022	2208120-08	8/3/2022	TA	N	25
	LORNG-LT-13	LORNG_LT13_FT_BT_08022022	2208120-09	8/2/2022	TA	N	25
	LORNG-LT-13A	LORNG_LT13A_FT_BT_08032022	2208120-10	8/3/2022	TA	N	25
	LORNG-LT-14A	LORNG_LT14A_FT_BT_08032022	2208120-11	8/3/2022	TA	N	25
	LT18	LORNG_LT18_FT_BT_08032022	2208120-12	8/3/2022	TA	N	25
	LT2	LORNG_LT02_FT_BT_08032022	2208120-04	8/3/2022	TA	N	25
2208121	LMR_001	LORNG_LMR_001_FT_FF_08042022	2208121-01	8/4/2022	TA	N	25
	LORNG-LT-02	LORNG_LT02_FT_FF_08042022	2208121-02	8/4/2022	TA	N	25
	LORNG-LT-05	LORNG_LT05_FT_BB_08052022	2208121-03	8/5/2022	TA	N	25
	LORNG-LT-05A	LORNG_LT05A_FT_BB_08062022	2208121-13	8/6/2022	TA	N	25
	LORNG-LT-14	LORNG_LT14_FT_BT_08042022	2208121-04	8/4/2022	TA	N	25
		LORNG_LT14_FT_SB_08052022	2208121-05	8/5/2022	TA	N	25
	LORNG-LT-15	LORNG_LT15_FT_BT_08042022	2208121-06	8/4/2022	TA	N	25
	LORNG-LT-16	LORNG_LT16_FT_BT_08042022	2208121-07	8/4/2022	TA	N	25
	LORNG-LT-17	LORNG_LT17_FT_BT_08042022	2208121-08	8/4/2022	TA	N	25
		LORNG_LT17_FT_CC_08042022	2208121-09	8/4/2022	TA	N	25
	LT18	LORNG_LT18_FT_SB_08052022	2208121-10	8/5/2022	TA	N	25
	LT19	LORNG_LT19_FT_BT_08042022	2208121-11	8/4/2022	TA	N	25
	WBGB_004	LORNG_WBGB_004_FT_BT_08032022	2208121-12	8/3/2022	TA	N	25
2210094	LT-05	LORNG_LT05_FT_BT_OFF_10042022	2210094-02	10/4/2022	TA	N	25
		LORNG_LT05_FT_BT_ON_10042022	2210094-01	10/4/2022	TA	N	25
	NP_001	LORNG_NP_001_FT_BT_10052022	2210094-03	10/5/2022	TA	N	25

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/12/23
Checked by: ALJ
Date:1/17/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	2208120															
			Location	GB_003		LMR_001		LMR_002		LORNG-LT-10-01		LORNG-LT-10-05		LORNG-LT-10-06		LORNG-LT-10-06A		LORNG-LT-13	
			Sample Date	8/3/2022		8/3/2022		8/3/2022		8/2/2022		8/2/2022		8/2/2022		8/3/2022		8/2/2022	
			Sample ID	LORNG_GB_003_FT_BT_08032022		LORNG_LMR_001_FT_BT_08032022		LORNG_LMR_002_FT_FF_08032022		LORNG_LT1001_FT_BT_08022022		LORNG_LT1005_FT_BT_08022022		LORNG_LT1006_FT_BT_08022022		LORNG_LT1006A_FT_BT_08032022		LORNG_LT13_FT_BT_08022022	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.971	UJ	0.893	U	0.82	UJ	0.952	U	0.962	UJ	0.917	UJ	0.99	UJ	0.909	UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.971	R	0.893	UJ	0.82	R	0.952	UJ	0.962	UJ	0.917	R	0.99	R	0.909	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.971	UJ	0.893	U	0.82	UJ	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.971	U	0.893	U	0.82	UJ	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorodecanoic acid (PFDA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.618	J	0.917	U	0.99	U	0.909	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.971	UJ	0.893	UJ	0.82	UJ	0.952	UJ	0.962	UJ	0.917	UJ	0.99	UJ	0.909	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.525	J	0.629	J	0.563	J	0.909	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.924	J	0.893	U	0.82	U	0.959	J	4.42		3.35		2.61		2.75	
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.971	U	0.893	U	0.82	UJ	0.952	U	0.962	U	0.917	U	0.569	J	0.909	U
		Perfluorononanoic acid (PFNA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.816	J	0.634	J	0.99	U	0.909	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.971	U	0.893	U	0.82	UJ	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	35.5		48.7		1.86		49		145		136		170		48.6	
		Perfluorooctanoic acid (PFOA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.971	U	0.893	U	0.82	U	0.952	U	0.962	U	0.917	U	0.99	U	0.909	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.971	R	0.893	R	0.82	R	0.952	R	0.962	R	0.917	R	0.99	R	0.909	R
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.971	UJ	0.893	UJ	0.82	UJ	0.952	UJ	0.962	UJ	0.917	UJ	0.99	UJ	0.909	UJ
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.578	J	0.893	U	0.82	UJ	0.952	UJ	0.636	J	0.554	J	0.99	U	0.909	UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
UG/KG = micrograms per kilogram
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/12/23
Checked by: ALJ
Date:1/17/23
Checked by: JAR
Date: 3/14/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		2208120				2208121			
		Location		LORNG-LT-13A	LORNG-LT-14A	LT18	LT2	LMR_001	LORNG-LT-02	LORNG-LT-05	LORNG-LT-05A
		Sample Date		8/3/2022	8/3/2022	8/3/2022	8/3/2022	8/4/2022	8/4/2022	8/5/2022	8/6/2022
		Sample ID		LORNG_LT13A_FT_BT_08032022	LORNG_LT14A_FT_BT_08032022	LORNG_LT18_FT_BT_08032022	LORNG_LT02_FT_BT_08032022	LORNG_LMR_001_FT_FF_08042022	LORNG_LT02_FT_FF_08042022	LORNG_LT05_FT_BB_08052022	LORNG_LT05A_FT_BB_08062022
		QC Code		N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 UJ
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 UJ	0.98 UJ	0.962 U	0.962 UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.971 UJ	0.943 R	0.917 UJ	0.943 UJ	0.971 R	0.98 R	0.962 R	0.962 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 UJ	0.98 UJ	0.962 U	0.962 UJ
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 UJ
		Perfluorodecanoic acid (PFDA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 UJ	0.98 U	0.571 J	0.962 UJ
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.971 UJ	0.943 UJ	0.917 UJ	0.943 UJ	0.971 UJ	0.98 UJ	0.592 J	0.962 UJ
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 UJ
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	2.04	1 J	0.835 J	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 UJ
		Perfluorononanoic acid (PFNA)	UG/KG	0.971 U	0.585 J	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 UJ	0.98 UJ	0.962 UJ	0.962 UJ
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	43.2	53.7	44.9	9.49	5.94	2.91	118	77.7 J
		Perfluorooctanoic acid (PFOA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.971 U	0.943 U	0.917 U	0.943 U	0.971 U	0.98 U	0.962 U	0.962 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.971 R	0.943 R	0.917 R	0.943 R	0.971 R	0.98 R	0.962 R	0.962 R
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.971 UJ	0.943 UJ	0.917 UJ	0.943 UJ	0.971 UJ	0.98 UJ	0.962 UJ	0.962 UJ
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.971 U	0.943 UJ	0.917 U	0.943 U	0.971 UJ	0.98 UJ	1.36 J	0.777 J

Notes:
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UG/KG = micrograms per kilogram
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/12/23
Checked by: ALJ
Date:1/17/23
Checked by: JAR
Date: 3/14/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	2208121													
			Location	LORNG-LT-14				LORNG-LT-15		LORNG-LT-16		LORNG-LT-17				LT18		LT19	
			Sample Date	8/4/2022		8/5/2022		8/4/2022		8/4/2022		8/4/2022				8/5/2022		8/4/2022	
			Sample ID	LORNG_LT14_FT_BT_08042022		LORNG_LT14_FT_SB_08052022		LORNG_LT15_FT_BT_08042022		LORNG_LT16_FT_BT_08042022		LORNG_LT17_FT_BT_08042022		LORNG_LT17_FT_CC_08042022		LORNG_LT18_FT_SB_08052022		LORNG_LT19_FT_BT_08042022	
			QC Code	N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1	U	0.971	U	1	UJ	1	U	0.98	U	0.952	U	1	UJ	0.962	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1	UJ	0.971	UJ	1	UJ	1	UJ	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1	UJ	0.971	UJ	1	R	1	R	0.98	R	0.952	R	1	R	0.962	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1	U	0.971	U	1	UJ	1	UJ	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1	U	0.971	UJ	1	U	1	U	0.98	U	0.952	U	1	UJ	0.962	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1	U	0.971	U	1	UJ	1	UJ	0.98	U	0.952	UJ	1	UJ	0.962	UJ
		Perfluorododecanoic acid (PFDoA)	UG/KG	1	UJ	0.971	UJ	1	R	1	R	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	UJ	0.962	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.88	J	0.971	U	0.641	J	1	U	0.98	U	0.952	U	1	U	1.1	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1	U	0.971	UJ	1	U	1	U	0.98	U	0.952	U	1	UJ	0.962	U
		Perfluorononanoic acid (PFNA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	UJ	0.962	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1	UJ	0.971	UJ	1	UJ	1	UJ	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	45.4		49.3	J	11.4		2.05		1.87	J	1.26	J	80.5	J	49.2	
		Perfluorooctanoic acid (PFOA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1	U	0.971	U	1	U	1	U	0.98	U	0.952	U	1	U	0.962	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1	R	0.971	R	1	R	1	R	0.98	R	0.952	R	1	R	0.962	R
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1	UJ	0.971	UJ	1	R	1	R	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1	UJ	0.524	J	1	UJ	1	UJ	0.98	UJ	0.952	UJ	1	UJ	0.962	UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
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UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objec
UG/KG = micrograms per kilogram
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/12/23
Checked by: ALJ
Date:1/17/23
Checked by: JAR
Date: 3/14/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	2208121		2210094					
			Location	WBGB_004		LT-05				NP_001	
			Sample Date	8/3/2022		10/4/2022				10/5/2022	
			Sample ID	LORNG_WBGB_004_FT_BT_08032022		LORNG_LT05_FT_BT_OFF_10042022		LORNG_LT05_FT_BT_ON_10042022		LORNG_NP_001_FT_BT_10052022	
			QC Code	N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.99	UJ	0.971	U	0.952	U	0.962	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.99	UJ	0.971	U	0.952	U	0.962	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.99	R	0.971	U	0.952	UJ	0.962	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.99	UJ	0.971	U	0.952	U	0.962	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.99	UJ	0.971	U	0.952	U	0.962	UJ
		Perfluorodecanoic acid (PFDA)	UG/KG	0.609	J	0.971	U	0.548	J	0.962	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.521	J	0.971	UJ	0.952	UJ	0.962	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.31	J	0.971	U	0.952	U	0.962	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	8.66		0.727	J	0.98	J	0.962	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.514	J	0.712	J	0.823	J	0.962	U
		Perfluorononanoic acid (PFNA)	UG/KG	0.521	J	0.971	U	0.952	U	0.962	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.99	UJ	0.971	U	0.952	U	0.962	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	258	J	141		192		1.42	J
		Perfluorooctanoic acid (PFOA)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.99	U	0.971	U	0.952	U	0.962	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.99	R	0.971	R	0.952	R	0.962	R
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.99	R	0.971	UJ	0.952	UJ	0.962	UJ
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.55	J	0.971	U	0.482	J	0.962	UJ

Notes:
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R = Sample reuslt is considered unusable for project objec
UG/KG = micrograms per kilogram
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/12/23
Checked by: ALJ
Date:1/17/23
Checked by: JAR
Date: 3/14/23

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
2208120	LC0012	T	2208120-01	LORNG_GB_003_FT_BT_08032022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.971	U	0.971	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.971	U	0.971	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.971	U	0.971	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.578	J	0.578	J	RIS	UG/KG
			2208120-02	LORNG_LMR_001_FT_BT_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.893	U	0.893	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.893	U	0.893	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.893	U	0.893	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.893	U	0.893	UJ	RIS	UG/KG
			2208120-03	LORNG_LMR_002_FT_FF_08032022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.82	U	0.82	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.82	U	0.82	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.82	U	0.82	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	0.82	U	0.82	UJ	MSL	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.82	U	0.82	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	0.82	U	0.82	UJ	MSL	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.82	U	0.82	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.82	U	0.82	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.82	U	0.82	UJ	MSL, RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.82	U	0.82	UJ	RIS	UG/KG

Prepared by:AKN
Date:1/12/23
Checked by: ALJ
Date: 1/17/23
Checked by: JAR
Date: 3/14/23

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
2208120	LC0012	T	2208120-04	LORNG_LT02_FT_BT_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.943	U	0.943	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.943	U	0.943	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.943	U	0.943	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.943	U	0.943	UJ	RIS	UG/KG
			2208120-05	LORNG_LT1001_FT_BT_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.952	U	0.952	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.952	U	0.952	UJ	RIS	UG/KG
			2208120-06	LORNG_LT1005_FT_BT_08022022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.962	U	0.962	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.636	J	0.636	J	RIS	UG/KG
			2208120-07	LORNG_LT1006_FT_BT_08022022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.917	U	0.917	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.917	U	0.917	R	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.917	U	0.917	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.917	U	0.917	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.917	U	0.917	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.554	J	0.554	J	RIS	UG/KG

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Checked by: JAR
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
2208120	LC0012	T	2208120-08	LORNG_LT1006A_FT_BT_08032022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.99	U	0.99	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.99	U	0.99	R	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.99	U	0.99	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.99	U	0.99	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.99	U	0.99	UJ	RIS	UG/KG
			2208120-09	LORNG_LT13_FT_BT_08022022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.909	U	0.909	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.909	U	0.909	R	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.909	U	0.909	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.909	U	0.909	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.909	U	0.909	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.909	U	0.909	UJ	RIS	UG/KG
			2208120-10	LORNG_LT13A_FT_BT_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.971	U	0.971	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.971	U	0.971	UJ	RIS	UG/KG
			2208120-11	LORNG_LT14A_FT_BT_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.943	U	0.943	R	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.943	U	0.943	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.943	U	0.943	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.943	U	0.943	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.943	U	0.943	UJ	RIS	UG/KG
			2208120-12	LORNG_LT18_FT_BT_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.917	U	0.917	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.917	U	0.917	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.917	U	0.917	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.917	U	0.917	UJ	RIS	UG/KG

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2208121	LC0012	T	2208121-01	LORNG_LMR_001_FT_FF_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.971	U	0.971	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.971	U	0.971	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.971	U	0.971	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.971	U	0.971	UJ	RIS	UG/KG
			2208121-02	LORNG_LT02_FT_FF_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.98	U	0.98	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.98	U	0.98	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.98	U	0.98	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.98	U	0.98	UJ	RIS	UG/KG
			2208121-03	LORNG_LT05_FT_BB_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.592	J	0.592	J	RIS, IAG	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	1.36	J	1.36	J	RIS	UG/KG

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2208121	LC0012	T	2208121-13	LORNG_LT05A_FT_BB_08062022	8:2 Fluorotelomer sulfonate (8:2 FTS)	0.962	U	0.962	UJ	RIS	UG/KG
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.962	U	0.962	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.962	U	0.962	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	77.7		77.7	J	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.777	J	0.777	J	RIS, IAG	UG/KG
			2208121-04	LORNG_LT14_FT_BT_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1	U	1	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	1	U	1	UJ	RIS	UG/KG

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2208121	LC0012	T	2208121-05	LORNG_LT14_FT_SB_08052022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.971	U	0.971	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	0.971	U	0.971	UJ	MSL	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	0.971	U	0.971	UJ	MSL, MSD	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	49.3		49.3	J	MSH, MSD	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.971	U	0.971	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.971	U	0.971	UJ	MSL, RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.524	J	0.524	J	RIS, IAG	UG/KG
			2208121-06	LORNG_LT15_FT_BT_08042022	8:2 Fluorotelomer sulfonate (8:2 FTS)	1	U	1	UJ	RIS	UG/KG
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1	U	1	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1	U	1	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	1	U	1	R	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	R	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	1	U	1	UJ	RIS	UG/KG

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2208121	LC0012	T	2208121-07	LORNG_LT16_FT_BT_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1	U	1	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1	U	1	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	1	U	1	R	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	R	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	1	U	1	UJ	RIS	UG/KG
			2208121-08	LORNG_LT17_FT_BT_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.98	U	0.98	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.98	U	0.98	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.98	U	0.98	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.98	U	0.98	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.98	U	0.98	UJ	RIS	UG/KG

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2208121	LC0012	T	2208121-09	LORNG_LT17_FT_CC_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.952	U	0.952	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.952	U	0.952	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.952	U	0.952	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.952	U	0.952	UJ	RIS	UG/KG
			2208121-10	LORNG_LT18_FT_SB_08052022	8:2 Fluorotelomer sulfonate (8:2 FTS)	1	U	1	UJ	RIS	UG/KG
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1	U	1	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1	U	1	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	1	U	1	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	1	U	1	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	1	U	1	UJ	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	1	U	1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	80.5		80.5	J	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	1	U	1	UJ	RIS	UG/KG

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2208121	LC0012	T	2208121-11	LORNG_LT19_FT_BT_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.962	U	0.962	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.962	U	0.962	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.962	U	0.962	UJ	RIS	UG/KG
			2208121-12	LORNG_WBGB_004_FT_BT_08032022	8:2 Fluorotelomer sulfonate (8:2 FTS)	0.99	U	0.99	UJ	RIS	UG/KG
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.99	U	0.99	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.99	U	0.99	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.99	U	0.99	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	0.99	U	0.99	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	0.609	J	0.609	J	RIS, IAG	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.521	J	0.521	J	RIS, IAG	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	1.31	J	1.31	J	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	0.514	J	0.514	J	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	0.521	J	0.521	J	IAG	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.99	U	0.99	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	258		258	J	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.99	U	0.99	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.99	U	0.99	R	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.55	J	0.55	J	RIS	UG/KG

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2210094	LC0012	T	2210094-02	LORNG_LT05_FT_BT_OFF_10042022	Perfluorododecanoic acid (PFDoA)	0.971	U	0.971	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.971	U	0.971	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.971	U	0.971	UJ	RIS	UG/KG
			2210094-01	LORNG_LT05_FT_BT_ON_10042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.952	U	0.952	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.952	U	0.952	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.952	U	0.952	UJ	RIS	UG/KG
			2210094-03	LORNG_NP_001_FT_BT_10052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.962	U	0.962	UJ	MSL, MSD, RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	0.962	U	0.962	UJ	MSL	UG/KG
					Perfluorododecanoic acid (PFDoA)	0.962	U	0.962	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	0.962	U	0.962	R	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.962	U	0.962	UJ	MSL, RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	0.962	U	0.962	UJ	RIS	UG/KG

Notes:

J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample result is considered unusable for project objectives
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limits
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
UG/KG = micrograms per kilogram

Prepared by:AKN
Date:1/12/23
Checked by: ALJ
Date: 1/17/23
Checked by: JAR
Date: 3/14/23

Table 4 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August and October 2022 Tissue Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Groundwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August - October 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 307 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 47 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Methods 8011 and 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polynuclear Aromatic Hydrocarbons (PAHs) and Select SVOCs by SW846 Methods 8270C Selected Ion Monitoring (SIM) and 8270D SIM
- Pesticides by SW846 Method 8081B
- Polychlorinated Biphenyls (PCBs) by SW846 Method 8082A
- Metals by SW846 Methods 6010C, 6020A, and 7470A
- Perchlorate (subcontracted to Eurofins Test America Laboratory (TAL) in South Burlington, Vermont) by SW846 Method 6850

Duplicates of groundwater samples LORNG_OW12002_09012022, LORNG_BW12005_09282022, LORNG_BW16002_10012022, and LORNG_OW17002_10022022 were collected and submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as interlaboratory comparison assessment samples. Vista analyzed four samples for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the PFAS and other chemistry data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CBL = Continuing calibration blank concentration less than the reporting limit
CCL = Continuing calibration standard recovery less than lower control limit
CFHD = Field sample/split sample RPD outside project limit
EBG = Equipment blank concentration greater than the reporting limit
FDD = Field duplicate RPD criteria exceeded
HHL = Holding time exceeded
IAG = Ion abundance ratio outside calculated limits
ICD = Initial calibration relative standard deviation limit exceeded
ISL = Internal standard response less than the lower control limit
LBL = Laboratory blank contamination less than reporting limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LDD = Lab duplicate RPD criteria exceeded
LCL = LCS recovery less than lower control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
SGL = Surrogate recovery less than lower control limit
SGH = Surrogate recovery greater than the upper control limit
SVLL = Second source verification standard recovery less than lower control limit
TBL = Trip blank concentration less than the reporting limit

Interlaboratory split samples LORNG-OW12002-09012022SPLIT, LORNG_BW12005_09282022SPLIT, LORNG_BW16002_10012022SPLIT, and LORNG_OW17002_10022022SPLIT were submitted to Vista as an additional quality assurance step. Data validation was not planned for Vista data unless gross deviations were observed. No gross deviations were observed. Results are presented in this report to complete the interlaboratory comparison only and are not included in the final data set of the Loring RI sampling program and not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6. An evaluation of split sample results is presented in Section 2.1.9.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS

Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent

recoveries less than the DoD PFAS validation guideline limit of 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_LF2MW2_08222022
LORNG_MMW0002_08222022
LORNG_JMW0880_08232022
LORNG_JMW0980_08232022
LORNG_JMW0991_08232022
LORNG_LF3MW4_08292022
LORNG_MMW0018B_08302022
LORNG_BW14005_08312022
LORNG_JMW0241A
LORNG_JMW0882_0832022
LORNG_BW18004_09012022
LORNG_BW22001_09012022
LORNG_JMW7916_09012022
LORNG_OW12001_09012022
LORNG_OW22003_09012022
LORNG_JMW0445_08312022
LORNG_MMW0007A_09082022
LORNG_JMW1960_09142022
LORNG_MMW0124_09142022
LORNG_OW21005_09142022
LORNG_OW21005_09142022FD
LORNG_USGS-2_40_09172022
LORNG_JMW3501_09182022
LORNG_JPZ0686_09182022
LORNG_OW24001_09182022
LORNG_JBW7215B_09182022
LORNG_MMW8015_09172022
LORNG_JMW0683_09192022
LORNG_AA07MW01_09202022
LORNG_IDW-EFF04_09202022
LORNG_JBW7710B_09202022
LORNG_JMW1565_09202022
LORNG_MMW0326_09202022
LORNG_OW17003_09202022
LORNG_JBW7335A_09192022
LORNG_ASMW101_09272022
LORNG_GC_BW002S_09282022
LORNG_JMW0682_09282022

LORNG_OW05004_09282022FD
LORNG_OW16002_09292022
LORNG_BW02002_09292022
LORNG_BW03001_09292022
LORNG_BW05011D_09292022
LORNG_OW20001_09302022
LORNG_BW01007_09302022
LORNG_BW01008_09302022
LORNG_BW18008_10012022
LORNG_BW03002_10012022
LORNG_BW18003_10022022
LORNG_OW02002_10032022
LORNG_OW10007_10032022
LORNG_GC_BW002S_10252022
LORNG_OW17003_10272022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022
LORNG_NP-OW001_10272022
LORNG_BW05011S_10262022
LORNG_BW17006_10262022
LORNG_GC_BW002D_10252022

The non-detect result for perfluorooctane sulfonamide (PFOSA) in sample LORNG_NP-BW001D_10272022 was qualified as rejected (R) based on EIS percent recovery less than the DoD PFAS validation guideline limit of 20. The result for PFOSA in sample LORNG_NP-BW001D_10272022 is considered unusable for project objectives.

PFAS detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for MS/MSD recovery, EIS recovery, field or laboratory duplicate RPD, and/or transition ion ratio. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for EIS recovery, LCS/LCSD recovery, MS/MSD recovery and RPD, holding time exceedance, and/or continuing calibration verification (CCV) standard percent difference. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Low concentration detections of 6:2 fluorotelomer sulfonate (6:2 FTS) in a subset of samples were qualified as non-detect (U) at the LOD or reported sample result due to concentrations of

6:2 FTS in the associated equipment blank greater than the LOD. Data gaps that may occur from using elevated reporting limits should be considered during contamination assessment. There is no project action limit for 6:2 FTS.

Of the 7,775 individual PFAS results reported for the groundwater event, a total of 60 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a PFAS data completeness of 99.2% for the groundwater data set.

VOCs

Non-detect results for 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by Method 8011 were qualified rejected (R) in sample LORNG_JBW7338B_09272022_K due to a lab error in sample surrogate spiking resulting in surrogate percent recoveries of zero (0). Results for the affected analytes in this sample are considered unusable for project objectives.

Low concentration detections of methylene chloride in samples LORNG_JMW0445_08312022_K and LORNG_OW12001_09012022_K were qualified non-detect (U) at the LOD based on contamination in the associated trip blank. No impact on data usability was identified.

Low concentration detections of chloromethane in samples LORNG_BW12006_10012022_K and LORNG_OW21005_09142022_K were qualified non-detect (U) at the LOD based on contamination in the associated trip blank. No impact on data usability was identified.

Reporting limits for VOCs were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for holding time, LCS/LCSD recovery, second source verification recovery and/or continuing calibration percent difference. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

VOC detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for surrogate recovery, MS/MSD recovery, and/or MS/MSD precision. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 1,998 individual VOC results (Methods 8260C and 8011) reported for the groundwater event, two results were qualified as rejected. This represents a VOC data completeness of 99.9% for the groundwater event.

SVOCs

The non-detect results for 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, 4-nitrophenol, and benzoic acid in sample LORNG_BW05007_09072022_K were qualified rejected (R) based on matrix spike/matrix spike duplicate percent recoveries less than 10. Results for the affected analytes in this sample are considered unusable for project objectives.

The non-detect results for 2-chlorophenol and benzoic acid in samples LORNG_OW24001_09182022_K and LORNG_OW16001_09182022_K were rejected (R) based on an LCSD percent recovery less than 10. Results for the affected analytes in this sample are considered unusable for project objectives.

Non-detect results for a subset of SVOC analytes in samples LORNG_JMW7348_09282022_K, LORNG_JMW7338B_09272022_K, LORNG_JBW7339B_10012022_K, LORNG_OW07003_10022022_K, and LORNG_OW08002_09302022_K were rejected (R) due to LCS and/or LCSD percent recoveries less than 10. Results for the affected analytes in this sample are considered unusable for project objectives.

The non-detect result for benzidine in sample LORNG_OW24001_10262022_K was qualified rejected (R) due to LCS and/or LCSD percent recoveries less than 10 and an LCS/LCSD RPD greater than DoD limits. Results for the affected analytes in this sample are considered unusable for project objectives.

Non-detect results for 2,3,4,6-tetrachlorophenol, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, 4-nitrophenol, benzidine, benzoic acid, and pyridine in samples LORNG_AA07MW01_09202022_K and LORNG_JMW0683_09192022_K were rejected (R) due to LCS and/or LCSD percent recoveries less than 10 and LCS/LCSD RPDs greater than DoD limits. Results for the affected analytes in these samples are considered unusable for project objectives.

Low level concentrations of bis(2-ethylhexyl) phthalate in samples LORNG_JPZ0349_09142022_K and LORNG_OW21005_09142022_K were qualified non-detect (U) at the LOD based on contamination in the associated method blank. No impact on data usability was identified.

Reporting limits for SVOCs were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery, LCS/LCSD RPD, MS/MSD recovery, MS/MSD RPD, surrogate recovery, instrument calibration check standard recovery, instrument internal standard recovery, and/or holding time. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

SVOC detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD RPD, surrogate recovery, and/or holding time. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 896 individual SVOC results (Method 8270D) reported for the groundwater event, a total of 41 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents an SVOC data completeness of 95.4% for the groundwater data set.

PAHs and Select SVOCs by SIM

Non-detect results for pentachlorophenol in samples LORNG_AA07MW01_09202022_K and LORNG_JMW0683_09192022_K were qualified as rejected (R) based on LCS/LCSD percent recoveries less than the lower rejection limit. Results for pentachlorophenol in these samples are considered unusable for project objectives.

Reporting limits for PAHs and Select SVOCs by SIM were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery, LCS/LCSD RPD, holding time, surrogate recovery, and/or instrument calibration check standard recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 298 individual PAH and select SVOCs by SIM results (Methods 8270C SIM and 8270D SIM) reported for the groundwater event, 2 results were qualified as rejected. This represents a PAH and select SVOCs by SIM data completeness of 99.3% for the groundwater event.

Pesticides and PCBs

Reporting limits for pesticides were qualified estimated (UJ) in sample LORNG_BW05007_09072022_K based on sample extraction performed after expiration of the holding time. Qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Samples LORNG_OW16001_09182022_K and LORNG_OW24001_09182022_K were analyzed for PCBs by the lab but were not requested on the associated COC. Results were ND for all aroclors, and results were included in report tables.

Of the 91 individual pesticides and PCBs results reported for the groundwater event, no results were qualified as rejected. This represents a pesticides and PCBs data completeness of 100% for the groundwater event.

Metals

Low concentration detections of total antimony, chromium, thallium, mercury, vanadium, and zinc in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated laboratory method blanks. LODs for antimony, chromium, vanadium, and zinc are less than associated PALs, and results for antimony, chromium, vanadium, and zinc are considered usable for project objectives. Although the LODs for mercury in a subset of samples and selenium in all samples are greater than associated project action limits (PALs), MDLs are less than the PALs and results for mercury and selenium are interpreted to be usable for project objectives. The LOD and MDL for thallium are greater than the PAL. The potential data gaps that may occur from using non-detect results for thallium should be considered during contamination assessment.

Low concentration detections of total iron and/or chromium in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated instrument calibration blanks. LODs for iron and chromium are less than associated PALs, and results for iron and chromium are considered usable for project objectives.

Of the 395 individual total and dissolved metals results (Methods 6010C, 6020A, and 7470A) reported for the groundwater event, no results were qualified as rejected. This represents a metals data completeness of 100% for the groundwater event.

Perchlorate

No data qualifications were required for perchlorate. Of the 12 individual perchlorate results reported for the groundwater event, no results were qualified as rejected. This represents a perchlorate data completeness of 100% for the groundwater event.

Laboratory reporting limits (RLs) and/or MDLs for all samples in the groundwater event are less than the Project Action Limits (PALs) identified in the QAPP with the following exception:

- Reporting limits for a subset of VOCs, SVOCs, and metals as reported by the laboratory do not meet the PALs.

Of the overall 11,390 individual results reported for the groundwater event, 105 results were qualified as rejected. This represents an overall data completeness of 99.1% for the groundwater event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
  LCS
  MS/MSD
  Field/Lab Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

Reporting limits for a subset of target compounds in sample LORNG_JBW7314_09072022 were qualified as estimated (UJ). Reported results for these compounds were obtained from a sample extraction performed six days after expiration of the 28-day extraction holding time.

2.1.2 QC Blanks

Low concentration detections of 6:2 FTS in samples LORNG_OW24001_09182022, LORNG_JBW7335A_09192022, and LORNG_JMW0681_09192022 were qualified as non-detect (U) at the LOD or reported sample result due to concentrations of 6:2 FTS in the associated equipment blank greater than the LOD.

2.1.3 LCS

Reporting limits for N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) in the following samples were qualified as estimated (UJ) based on an LCS percent recovery less than DoD Limits:

LORNG_JMW0416B_08302022
LORNG_JMW0806_08302022
LORNG_JMW0961_08292022
LORNG_JMW0992_08302022
LORNG_JPZ7808_08302022
LORNG_MMW0018B_08302022
LORNG_MMW0422_08302022
LORNG_MMW0423_08302022

LORNG_OW22001_08292022
LORNG_RFW-38_08302022

2.1.4 MS/MSD

The 6:2 FTS results in samples LORNG_BW06007_09012022 and LORNG_JBW7341B_09272022 were qualified as estimated (J) based on MS percent recovery less than DoD limits.

The reporting limits for perfluorodecane sulfonate (PFDS) and perfluorotridecanoic acid (PFTrDA) in sample LORNG_MMW0007B_09082022 were qualified as estimated (UJ) based on MSD percent recoveries less than DoD limits and MS/MSD relative percent differences greater than DoD limits.

The result for perfluoropentanesulfonic acid (PFPeS) in sample LORNG_BW07003_09272022 was qualified as estimated (J) based on an MS percent recovery less than DoD limits.

The result for perfluorohexanesulfonic acid (PFHxS) in sample and LORNG_JBW7341B_09272022 was qualified as estimated (J) based on an MSD percent recovery greater than DoD limits.

The reporting limit for PFTrDA in sample LORNG_JBW7614_09282022 was qualified as estimated (UJ) based on an MSD percent recovery less than DoD limits and an MS/MSD relative percent difference greater than DoD limits.

2.1.5 Field/Lab Duplicates

The results for perfluorooctanesulfonic acid (PFOS) in field sample LORNG_BSMW3S_09182022 and its associated field duplicate, LORNG_BSMW3S_09182022FD, were qualified as estimated (J) based on a field duplicate relative percent difference that exceeds DoD limits.

The results for 6:2 FTS in field samples LORNG_JMW6001_09282022 and LORNG_AA07MW02_09202022 and the associated field duplicates, LORNG_JMW6001_09282022FD and LORNG_AA07MW02_09202022FD, were qualified as estimated (J) based on field duplicate relative percent differences that exceed DoD limits.

The result for perfluorononanesulfonic acid (PFNS) in sample LORNG_OW07001_10042022 was qualified as estimated (J) based on a lab duplicate relative percent difference that exceeds DoD limits.

2.1.6 Extracted Internal Standard Recovery

The EIS percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

The non-detect result for PFOSA in sample LORNG_NP-BW001D_10272022 was qualified as rejected (R) based on an EIS percent recovery less than 50. The result for PFOSA in the affected sample is considered unusable for project objectives.

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_JMW0880_08232022
LORNG_JMW0980_08232022
LORNG_JMW0991_08232022
LORNG_LF2MW2_08222022
LORNG_MMW0002_08222022
LORNG_LF3MW4_08292022
LORNG_MMW0018B_08302022
LORNG_BW14005_08312022
LORNG_JMW0241A_08302022
LORNG_JMW0882_08302022
LORNG_BW18004_09012022
LORNG_BW22001_09012022
LORNG_JMW0445_08312022
LORNG_JMW7916_09012022
LORNG_OW12001_09012022
LORNG_OW22003_09012022
LORNG_MMW0007A_09082022
LORNG_JMW1960_09142022
LORNG_MMW0124_09142022
LORNG_OW21005_09142022
LORNG_OW21005_09142022FD
LORNG_JBW7215B_09182022
LORNG_JMW3501_09182022
LORNG_JPZ0686_09182022
LORNG_MMW8015_09172022
LORNG_OW24001_09182022
LORNG_USGS-2_40_09172022
LORNG_AA07MW01_09202022
LORNG_IDW-EFF04_09202022
LORNG_JBW7335A_09192022
LORNG_JBW7710B_09202022
LORNG_JMW0683_09192022
LORNG_JMW1565_09202022
LORNG_MMW0326_09202022
LORNG_OW17003_09202022
LORNG_ASMW101_09272022
LORNG_BW02002_09292022
LORNG_BW03001_09292022

LORNG_BW05011D_09292022
LORNG_GC_BW002S_09282022
LORNG_JMW0682_09282022
LORNG_OW05004_09282022FD
LORNG_OW16002_09292022
LORNG_BW01007_09302022
LORNG_BW01008_09302022
LORNG_BW03002_10012022
LORNG_BW18003_10022022
LORNG_BW18008_10012022
LORNG_OW02002_10032022
LORNG_OW20001_09302022
LORNG_OW10007_10032022
LORNG_BW05011S_10262022
LORNG_BW17006_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022
LORNG_NP-OW001_10272022
LORNG_OW17003_10272022

Reporting limits for PFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_MMW0018B_08302022
LORNG_JMW0241A_08302022
LORNG_JMW0882_08302022
LORNG_BW18004_09012022
LORNG_IDW-EFF04_09202022
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001S_10272022
LORNG_NP-OW001_10272022

Reporting limits for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0982_08232022
LORNG_OW07003_08232022
LORNG_JMW0416B_08302022
LORNG_JMW0961_08292022
LORNG_JMW0992_08302022

LORNG_JPZ7808_08302022
LORNG_LF3MW3_08292022
LORNG_MMW0009_08302022
LORNG_MMW0422_08302022
LORNG_MMW0423_08302022
LORNG_OW22001_08292022
LORNG_RFW-38_08302022
LORNG_JMW0941_08302022
LORNG_JPZ7704_08302022
LORNG_OW10007_08312022
LORNG_BW05006_09012022
LORNG_BW10006_09012022
LORNG_BW10006_09012022FD
LORNG_BW17004_08312022
LORNG_BW17005_09012022
LORNG_CBW02_08312022
LORNG_FMW3410_09012022
LORNG_JBW7403_08312022
LORNG_JBW7711_09012022
LORNG_JBW7912_150_09012022
LORNG_JBW7912_40_09012022
LORNG_OW10005_08312022FD
LORNG_OW12002_09012022
LORNG_OW14004_08312022
LORNG_043-MW03_09062022
LORNG_BW05007_09072022
LORNG_JBW7314_09072022
LORNG_MMW0007B_09082022
LORNG_MMW0132_09082022
LORNG_BW06005_09142022
LORNG_BW06006_09142022
LORNG_JMW1982_09142022
LORNG_JPZ0349_09142022
LORNG_MMW0011_09132022
LORNG_MMW0017_09132022
LORNG_BSMW3S_09182022
LORNG_BSMW3S_09182022FD
LORNG_BW01005_09182022
LORNG_BW17006_09182022
LORNG_JBW7304B_09182022
LORNG_JMW0602_09182022
LORNG_JMW3601_09182022
LORNG_JMW8011_09172022
LORNG_JPZ1382_09172022
LORNG_JPZ1780_09182022

LORNG_OW16001_09182022
LORNG_RFW1144_09172022
LORNG_UNK-044_09182022
LORNG_044-RW01_09192022
LORNG_AA07MW02_09202022
LORNG_AA07MW02_09202022FD
LORNG_JBW7336A_09192022
LORNG_JBW7347B_09192022
LORNG_JBW7738A_09202022
LORNG_JBW7738A_09202022FD
LORNG_JBW7738B_09202022
LORNG_JBW8009_09192022
LORNG_JMW0301C_09192022
LORNG_JMW0603_09192022
LORNG_JMW0681_09192022
LORNG_JMW0681_09192022FD
LORNG_JPZ0342_09192022
LORNG_MMW0006_09202022
LORNG_AA11MW01_09282022
LORNG_AA11MW02_09282022
LORNG_AA11MW02_09282022FD
LORNG_AA18MW01_09282022
LORNG_AA20MW01_09282022
LORNG_AA20MW02_09282022
LORNG_BW07003_09272022
LORNG_BW10007_09292022
LORNG_GC_BW002D_09282022
LORNG_JBW7316_09292022
LORNG_JBW7335B_09282022
LORNG_JBW7338B_09272022
LORNG_JBW7339A_09272022
LORNG_JBW7341B_09272022
LORNG_JBW7345B_09272022
LORNG_JBW7348_09282022
LORNG_JBW7614_09282022
LORNG_JBW7734_09272022
LORNG_JBW7737A_09282022
LORNG_JMW0682_09282022FD
LORNG_JMW1665_09272022
LORNG_JMW1665_09272022FD
LORNG_JMW1684_09272022
LORNG_JMW6001_09282022
LORNG_JMW6001_09282022FD
LORNG_JMW7913_09292022
LORNG_JMW7913_09292022FD

LORNG_NP_BW001D_09292022
LORNG_NP_BW001S_09292022
LORNG_NP_OW001_09292022
LORNG_OW01002_09292022
LORNG_OW01003_09292022
LORNG_OW01004_09292022
LORNG_OW05004_09282022
LORNG_AA18MW02_09302022
LORNG_BB_OW001_10012022
LORNG_BW01006_09302022FD
LORNG_BW01009_09302022
LORNG_BW05009_10022022
LORNG_BW05010_10022022
LORNG_BW09001_09302022
LORNG_BW12006_10012022
LORNG_BW13002_10022022
LORNG_BW13003_10022022
LORNG_BW16001_10012022
LORNG_BW18006_09302022
LORNG_BW18007_10012022
LORNG_BW18007_10012022FD
LORNG_BW18009_10012022
LORNG_BW18010_10022022
LORNG_BW20001_09302022
LORNG_BW20002_10022022
LORNG_EBGB_BW001_10012022
LORNG_EBGB_BW002_09302022
LORNG_GC_BW001_10022022
LORNG_JBW7339B_10012022
LORNG_JMW0505_10012022
LORNG_OW05003_10012022
LORNG_OW07002_09302022
LORNG_OW08001_09302022
LORNG_OW08001_09302022FD
LORNG_OW09001_09302022
LORNG_OW17002_10022022
LORNG_OW20003_10012022
LORNG_OW20005_10022022
LORNG_OW23001_10022022
LORNG_WBGB_BW001_10012022
LORNG_WBGB_BW001_10012022FD
LORNG_WWTP_WSW_09302022
LORNG_BW18004_10032022
LORNG_OW07001_10042022
LORNG_BW05011D_10262022

LORNG_BW06006_10252022
LORNG_OW24001_10262022

Reporting limits for 4:2 fluorotelomer sulfonate (4:2 FTS) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW05011D_10262022
LORNG_BW05011S_10262022
LORNG_BW06006_10252022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

Reporting limits for 6:2 FTS in samples LORNG_JPZ7808_08302022 and LORNG_GC_BW002S_10252022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for 8:2 fluorotelomer sulfonate (8:2 FTS) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_JBW7314_09072022
LORNG_BW12006_10012022
LORNG_BW18009_10012022
LORNG_OW09001_09302022

Reporting limits for N-EtFOSAA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0961_08292022
LORNG_JPZ7808_08302022
LORNG_MMW0423_08302022
LORNG_BW12006_10012022
LORNG_BW18008_10012022
LORNG_BW18009_10012022
LORNG_BW22001_10032022

Reporting limits for N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0961_08292022
LORNG_JPZ7808_08302022
LORNG_MMW0018B_08302022
LORNG_MMW0423_08302022

LORNG_BW18009_10012022

Reporting limits for perfluorobutanoic acid (PFBA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW05011D_10262022
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

Positive detections of PFBA in the following samples were qualified as estimated (J) based on EIS percent recoveries less than 50:

LORNG_OW17001_08312022
LORNG_JMW1565_09202022
LORNG_WBGB_BW001_10012022FD
LORNG_BW17006_10262022
LORNG_OW17003_10272022

Reporting limits for PFDS in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0880_08232022
LORNG_MMW0002_08222022
LORNG_JPZ7808_08302022
LORNG_MMW0423_08302022
LORNG_JBW7314_09072022
LORNG_BB_OW002_10012022FD
LORNG_BW12006_10012022
LORNG_BW18009_10012022
LORNG_OW09001_09302022
LORNG_WBGB_BW001_10012022FD
LORNG_BW06006_10252022

Reporting limits for perfluorodecanoic acid (PFDA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW12006_10012022
LORNG_BW18009_10012022
LORNG_WBGB_BW001_10012022FD
LORNG_BW06006_10252022

Reporting limits for perfluorododecanoic acid (PFDoA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0880_08232022
LORNG_JPZ7808_08302022
LORNG_MMW0422_08302022
LORNG_MMW0423_08302022
LORNG_JBW8009_09192022
LORNG_MMW0006_09202022
LORNG_BB_OW002_10012022FD
LORNG_BW12006_10012022
LORNG_BW13002_10022022
LORNG_BW18009_10012022
LORNG_BW20002_10022022
LORNG_JMW0505_10012022
LORNG_OW05003_10012022
LORNG_OW07003_10022022
LORNG_OW09001_09302022
LORNG_OW17002_10022022
LORNG_OW20004_10022022
LORNG_OW20006_10012022
LORNG_WBGB_BW001_10012022
LORNG_WBGB_BW001_10012022FD
LORNG_BW05011D_10262022
LORNG_BW05011S_10262022
LORNG_BW06006_10252022
LORNG_BW17006_10262022
LORNG_GC_BW002S_10252022

The result for perfluoroheptanesulfonic acid (PFHpS) in sample LORNG_OW07003_08232022 was qualified as estimated (J) based on an EIS percent recovery less than 50.

Reporting limits for perfluoroheptanoic acid (PFHpA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

Reporting limits for PFHxS in samples LORNG_GC_BW002D_10252022, LORNG_GC_BW002S_10252022, and LORNG_NP-BW001D_10272022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Positive detections of PFHxS in samples LORNG_BW05011S_10262022 and LORNG_NP-BW001S_10272022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

Reporting limits for perfluorohexanoic acid (PFHxA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

The positive detection of PFHxA in sample LORNG_WBGB_BW001_10012022FD was qualified as estimated (J) based on an EIS percent recovery less than 50.

Reporting limits for PFNS in samples LORNG_OW07003_08232022, LORNG_BW18009_10012022, and LORNG_BW06006_10252022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for perfluorononanoic acid (PFNA) in samples LORNG_JPZ7808_08302022 and LORNG_GC_BW002S_10252022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The reporting limit for PFOS in sample LORNG_BW18009_10012022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

Reporting limits for perfluorooctanoic acid (PFOA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

The reporting limit for PFPeS in sample LORNG_MMW0002_08222022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

Reporting limits for perfluoropentanoic acid (PFPeA) in samples LORNG_JPZ7808_08302022 and LORNG_OW17003_09202022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Positive detections of PFPeA in the following samples were qualified as estimated (J) based on EIS percent recoveries less than 50:

LORNG_MMW0422_08302022
LORNG_WBGB_BW001_10012022FD
LORNG_BW05011S_10262022
LORNG_GC_BW002D_10252022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001D_10272022
LORNG_NP-BW001S_10272022

Reporting limits for perfluorotetradecanoic acid (PFTeDA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0880_08232022
LORNG_JMW0980_08232022
LORNG_JMW0982_08232022
LORNG_JPZ7808_08302022
LORNG_LF3MW3_08292022
LORNG_MMW0422_08302022
LORNG_RFW-38_08302022
LORNG_JBW7738A_09202022
LORNG_JBW7738A_09202022FD
LORNG_JBW8009_09192022
LORNG_MMW0006_09202022
LORNG_MMW0326_09202022
LORNG_BB_OW001_10012022
LORNG_BB_OW002_10012022
LORNG_BB_OW002_10012022FD
LORNG_BW10008_10022022
LORNG_BW12006_10012022
LORNG_BW13002_10022022
LORNG_BW16002_10012022
LORNG_BW18009_10012022
LORNG_BW20002_10022022
LORNG_JBW7339B_10012022
LORNG_JMW0505_10012022
LORNG_OW09001_09302022
LORNG_OW20004_10022022
LORNG_OW20006_10012022
LORNG_WBGB_BW001_10012022
LORNG_WBGB_BW001_10012022FD
LORNG_BW05011D_10262022
LORNG_BW05011S_10262022
LORNG_BW06006_10252022
LORNG_BW17006_10262022
LORNG_GC_BW002S_10252022
LORNG_NP-BW001S_10272022

LORNG_OW17003_10272022

Reporting limits for PFTrDA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JMW0880_08232022
LORNG_JPZ7808_08302022
LORNG_LF3MW3_08292022
LORNG_MMW0422_08302022
LORNG_MMW0423_08302022
LORNG_JBW8009_09192022
LORNG_MMW0006_09202022
LORNG_BB_OW002_10012022FD
LORNG_BW10008_10022022
LORNG_BW12006_10012022
LORNG_BW13002_10022022
LORNG_BW18009_10012022
LORNG_BW20002_10022022
LORNG_JMW0505_10012022
LORNG_OW05003_10012022
LORNG_OW07003_10022022
LORNG_OW09001_09302022
LORNG_OW17002_10022022
LORNG_OW20004_10022022
LORNG_OW20006_10012022
LORNG_WBGB_BW001_10012022
LORNG_WBGB_BW001_10012022FD
LORNG_BW05011D_10262022
LORNG_BW05011S_10262022
LORNG_BW06006_10252022
LORNG_BW17006_10262022
LORNG_GC_BW002S_10252022

Reporting limits for perfluoroundecanoic acid (PFUnA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_JPZ7808_08302022
LORNG_MMW0423_08302022
LORNG_BB_OW002_10012022FD
LORNG_BW10008_10022022
LORNG_BW12006_10012022
LORNG_BW18009_10012022
LORNG_OW09001_09302022
LORNG_WBGB_BW001_10012022FD
LORNG_BW06006_10252022

2.1.7 Continuing Calibration

Reporting limits for N-EtFOSAA in samples LORNG_JMW0416B_08302022 and LORNG_RFW1144_09172022 were qualified as estimated (UJ) due to one or more associated continuing calibration verification standards (CCVs) reporting a percent difference outside of DoD limits.

2.1.8 Miscellaneous

The transition ion ratio for PFOSA in sample LORNG_JMW0982_08232022 was outside the acceptable ion ratio range calculated from the associated daily calibration standard. The PFOSA result in the sample LORNG_JBW0982_08232022 was qualified estimated (J).

2.1.9 Interlaboratory Split Samples

Interlaboratory split samples were collected in association with the following groundwater samples:

LORNG_OW12002_09012022
LORNG_BW12005_09282022
LORNG_BW16002_10012022
LORNG_OW17002_10022022

A summary of split sample results is presented on Table 6. Comparison criteria are established in QPP Appendix E. The majority of PFAS target compounds were not detected in each of the samples. PFAS compounds that were detected showed general agreement between results reported by SGS and Vista. Ninety-six percent of compound results met comparability goals specified in the QPP. Four compound results had RPDs greater than the QPP goal of 30, with RPDs ranging from 36 to 71. Results for the split samples analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets and no data qualifiers were applied as a result of the split sample evaluation.

2.2 VOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
  LCS
  MS/MSD
* Field Duplicates
  Surrogate
* Reporting Limits

* Electronic Data Verification
* Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.2.1 Holding Times

Reporting limits for 1,2-dibromo-3-chloropropane and 1,2-dibromoethane in the following samples were qualified as estimated (UJ) due to analysis time exceeding DoD limits:

LORNG_BW05007_09072022_K
LORNG_JBW7711_09012022_K
LORNG_JBW7711_09012022FD_K
LORNG_JMW0445_08312022_K
LORNG_OW12001_09012022_K
LORNG_BW06005_09142022_K
LORNG_JPZ0349_09142022_K
LORNG_OW21005_09142022_K

2.2.2 QC Blanks

Methylene chloride was detected in the trip blank LORNG_TB12_08312022 (1.4 ug/L) associated with samples LORNG_JMW0445_08312022_K and LORNG_OW12001_09012022_K. The detections of methylene chloride in both samples were less than the LOD and results were qualified as not-detected (U) at the LOD.

Chloromethane was detected in the trip blank LORNG_TB13_09152022 (1.5 ug/L) associated with sample LORNG_OW21005_09142022_K. The detection of chloromethane in sample LORNG_OW21005_09142022_K was less than the LOD, and the result was qualified as not-detected (U) at the LOD.

Chloromethane was detected in the trip blank LORNG_TB16_10032022 (0.85 ug/L) associated with sample LORNG_BW12006_10012022_K. The detection of chloromethane in sample LORNG_BW12006_10012022_K was less than the LOQ and greater than the LOD, and the result was qualified as not-detected (U) at the reported sample result.

2.2.3 LCS

Reporting limits for iodomethane (methyl iodide) in the following samples were qualified as estimated (UJ) based on LCS and/or LCSD percent recoveries less than DoD limits:

LORNG_JBW7338B_09272022_K
LORNG_BW12006_10012022_K
LORNG_JBW7339B_10012022_K

LORNG_OW07003_10022022_K
LORNG_OW08002_09302022_K
LORNG_OW24001_10262022_K

2.2.4 MS/MSD

Results for 1,2,4-trimethylbenzene, cyclohexane, and methylcyclohexane in sample LORNG_JMW0445_08312022_K were qualified as estimated (J) based on MSD percent recoveries and/or MS/MSD relative percent differences greater than DoD limits.

2.2.5 Surrogate

Non-detect results for 1,2-dibromo-3-chloropropane and 1,2-dibromoethane in sample LORNG_JBW7338B_09272022_K were qualified as rejected (R) based on a surrogate percent recovery of 0.

Results for a subset of analytes in samples LORNG_JBW7348_09282022_K, LORNG_JBW7737B_09282022_K, and LORNG_JBW7339B_10012022_K were qualified as estimated (J) based on surrogate percent recoveries greater than DoD limits.

2.2.6 Continuing Calibration

Reporting limits for carbon tetrachloride, chloroethane, and viny acetate in samples LORNG_JMW0445_08312022_K and LORNG_OW12001_09012022_K were qualified as estimated (UJ) based on second source verification and/or continuing calibration percent differences less than DoD limits.

2.3 SVOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
  Instrument Performance/Tuning
  LCS
  MS/MSD
* Field Duplicates
  Surrogate
* Reporting Limits
* Electronic Data Verification
  Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* Miscellaneous

* QC criteria were met for this parameter.

2.3.1 Holding Time

All results and reporting limits in sample LORNG_JBW7711_09012022_K and LORNG_JMW0445_08312022_K were qualified as estimated (J/UJ) due to extraction time exceeding method holding times.

2.3.2 QC Blanks

Bis(2-ethylhexyl)phthalate was detected below the LOQ in the method blanks associated with samples LORNG_JPZ0349_09142022_K and LORNG_OW21005_09142022_K. Detected concentrations of bis(2-ethylhexyl)phthalate in associated samples were less than the LODs and less than the reported concentrations in the method blanks. Results were qualified not-detected (U) at the LOD.

2.3.3 Instrument Performance/Tuning

The reporting limit for di-N-octylphthalate in sample LORNG_JPZ0349_09142022_K was qualified as estimated (UJ) based on the associated internal standard response outside of the range calculated from the initial calibration.

2.3.4 Laboratory Control Sample

Percent recoveries for a subset of SVOCs in the LCS/LCSDs associated with the following samples were less than the QC rejection limit of 10. The LCS/LCSD RPDs for several SVOCs were outside of the acceptance criteria. The affected SVOCs were not detected in the samples and the reporting limits were qualified as rejected (R).

LORNG_OW16001_09182022_K
LORNG_OW24001_09182022_K
LORNG_AA07MW01_09202022_K
LORNG_JMW0683_09192022_K
LORNG_JBW7338B_09272022_K
LORNG_JBW7348_09282022_K
LORNG_JBW7339B_10012022_K
LORNG_OW07003_10022022_K
LORNG_OW08002_09302022_K
LORNG_OW24001_10262022_K

The percent recoveries and relative percent differences for a subset of analytes in the LCS/LCSDs associated with the following samples were outside of project limits. Results and reporting limits for the affected analytes in the following samples were qualified estimated (J/UJ):

LORNG_OW16001_09182022_K

LORNG_OW24001_09182022_K
LORNG_AA07MW01_09202022_K
LORNG_JMW0683_09192022_K
LORNG_JBW7338B_09272022_K
LORNG_JBW7348_09282022_K
LORNG_JBW7339B_10012022_K
LORNG_OW07003_10022022_K
LORNG_OW08002_09302022_K
LORNG_OW24001_10262022_K

2.3.5 MS/MSD

Non-detect results for 2,4-dinitriphenol, 4,6-dinitro-2-methylphenol, 4-nitrophenol, and benzoic acid in sample LORNG_BW05007_09072022_K were qualified as rejected (R) based on MS/MSD percent recoveries less than the lower rejection limit.

Reporting limits for a subset of analytes in sample LORNG_BW05007_09072022_K were qualified as estimated (UJ) based on MS/MSD percent recoveries and or MS/MSD relative percent differences outside of DoD limits.

2.3.6 Surrogates

Reporting limits for subsets of analytes in samples LORNG_JBW7339B_10012022_K and LORNG_OW24001_10262022_K were qualified as estimated (UJ) based on surrogate percent recoveries less than DoD limits.

2.3.6 Initial/Continuing Calibration

Reporting limits for benzaldehyde, benzidine, and benzyl alcohol were qualified estimated (UJ) in samples LORNG_BW05007_09072022_K and LORNG_JMW0445_08312022_K based on instrument calibration check standard and/or second source verification standard recoveries outside project control limits.

2.4 PAHs and Select SVOCs by SIM

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning
  LCS
* MS/MSD
* Field Duplicates
  Surrogate

* Reporting Limits
* Electronic Data Verification
  Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.4.1 Holding Time

Positive and non-detect results for all target analytes in samples LORNG_JBW7711_09012022_K and LORNG_JMW0445_08312022_K were qualified as estimated (J/UJ) based on sample extraction after expiration of the seven day holding time.

The reporting limit for pentachlorophenol in sample LORNG_OW24001_10262022_K was qualified estimated (UJ) based on sample extraction after expiration of the seven day holding time.

2.4.2 LCS

Non-detect results for pentachlorophenol in samples LORNG_AA07MW01_09202022_K and LORNG_JMW0683_09192022_K were qualified as rejected (R) based on LCS/LCSD percent recovery less than the QC rejection limit of 10. The LCS/LCSD RPD was outside of the acceptance criteria.

Reporting limits for a subset of analytes in the following samples were qualified as estimated (UJ) based on LCS/LCSD percent recoveries and or LCS/LCSD relative percent differences outside of DoD limits:

LORNG_OW16001_09182022_K
LORNG_OW24001_09182022_K
LORNG_JBW7339B_10012022_K
LORNG_OW07003_10022022_K
LORNG_OW08002_09302022_K

2.4.3 Surrogate

Reporting limits for a subset of analytes in sample LORNG_OW24001_10262022_K were qualified as estimated (UJ) based on surrogate percent recoveries less than DoD limits.

2.4.4 Initial Calibration

Reporting limits for chrysene and dibenz(a,h)anthracene in samples LORNG_BW05007_09072022_K and LORNG_JMW0445_08312022_K were qualified as estimated (UJ) based on initial calibration percent recoveries less than DoD limits.

2.5 Pesticides

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.5.1 Holding Times

Reporting limits for all analytes in sample LORNG_BW05007_09072022_K were qualified as estimated (UJ) due to extraction exceeding method holding times.

2.6 PCBs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD

* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.7 Metals

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Total/Dissolved Solids
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.7.1 QC Blanks

Low concentration detections of total antimony, chromium, thallium, mercury, vanadium, and zinc in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated laboratory method blanks.

Low concentration detections of total iron and chromium in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated instrument calibration blanks.

2.8 Perchlorate

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

Reference:

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USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



December 12, 2022

Reviewed by: Julie Ricardi



January 25, 2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS		VOCs		SVOCs by SIM	SVOCs
						Method Class						
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D
						Fraction	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
2210025	BW12005	LORNG_BW12005_09282022SPLIT	2210025-01	9/28/2022	WG	N		25				
	BW16002	LORNG_BW16002_10012022SPLIT	2210025-02	10/1/2022	WG	N		25				
	OW17002	LORNG_OW17002_10022022SPLIT	2210025-03	10/2/2022	WG	N		25				
2209096	OW12002	LORNG-OW12002-09012022SPLIT	2209096-01	9/1/2022	WG	N		25				
FA98397	FIELDQC	LORNG_EB032_08232022	FA98397-1	8/23/2022	WQ	EB	25					
		LORNG_EB033_08232022	FA98397-2	8/23/2022	WQ	EB	25					
		LORNG_EB034_08242022	FA98397-3	8/24/2022	WQ	EB	25					
	JMW0880	LORNG_JMW0880_08232022	FA98397-4	8/23/2022	WG	N	25					
	JMW0980	LORNG_JMW0980_08232022	FA98397-5	8/23/2022	WG	N	25					
	JMW0982	LORNG_JMW0982_08232022	FA98397-6	8/23/2022	WG	N	25					
	JMW0991	LORNG_JMW0991_08232022	FA98397-7	8/23/2022	WG	N	25					
	LF2MW2	LORNG_LF2MW2_08222022	FA98397-8	8/22/2022	WG	N	25					
	MMW0002	LORNG_MMW0002_08222022	FA98397-9	8/22/2022	WG	N	25					
	OW07003	LORNG_OW07003_08232022	FA98397-10	8/23/2022	WG	N	25					
FA98576	JMW-0416B	LORNG_JMW0416B_08302022	FA98576-1	8/30/2022	WG	N	25					
	JMW-0806	LORNG_JMW0806_08302022	FA98576-2	8/30/2022	WG	N	25					
	JMW0961	LORNG_JMW0961_08292022	FA98576-3	8/29/2022	WG	N	25					
	JMW0992	LORNG_JMW0992_08302022	FA98576-13	8/30/2022	WG	N	25					
	JPZ7808	LORNG_JPZ7808_08302022	FA98576-4	8/30/2022	WG	N	25					
	LF3MW3	LORNG_LF3MW3_08292022	FA98576-5	8/29/2022	WG	N	25					
	LF3MW4	LORNG_LF3MW4_08292022	FA98576-6	8/29/2022	WG	N	25					
	MMW0009	LORNG_MMW0009_08302022	FA98576-7	8/30/2022	WG	N	25					
	MMW0018B	LORNG_MMW0018B_08302022	FA98576-8	8/30/2022	WG	N	25					
	MMW0422	LORNG_MMW0422_08302022	FA98576-9	8/30/2022	WG	N	25					
	MMW0423	LORNG_MMW0423_08302022	FA98576-10	8/30/2022	WG	N	25					
	OW22001	LORNG_OW22001_08292022	FA98576-11	8/29/2022	WG	N	25					
	RFW-38	LORNG_RFW-38_08302022	FA98576-12	8/30/2022	WG	N	25					
FA98616	BW14005	LORNG_BW14005_08312022	FA98616-1	8/31/2022	WG	N	25					
	FIELDQC	LORNG_EB035_08302022	FA98616-2	8/30/2022	WQ	EB	25					
		LORNG_EB036_08302022	FA98616-3	8/30/2022	WQ	EB	25					
		LORNG_EB037_08302022	FA98616-4	8/30/2022	WQ	EB	25					
		LORNG_EB038_08302022	FA98616-5	8/30/2022	WQ	EB	25					
		LORNG_EB039_08312022	FA98616-6	8/31/2022	WQ	EB	25					
	JMW0241A	LORNG_JMW0241A_08302022	FA98616-7	8/30/2022	WG	N	25					
	JMW0882	LORNG_JMW0882_08302022	FA98616-8	8/30/2022	WG	N	25					
	JMW0941	LORNG_JMW0941_08302022	FA98616-9	8/30/2022	WG	N	25					
	JPZ7704	LORNG_JPZ7704_08302022	FA98616-10	8/30/2022	WG	N	25					
	MMW0015	LORNG_MMW0015_08302022	FA98616-11	8/30/2022	WG	N	25					
	OW10007	LORNG_OW10007_08312022	FA98616-12	8/31/2022	WG	N	25					
FA98677	BW05006	LORNG_BW05006_09012022	FA98677-16	9/1/2022	WG	N	25					
	BW06007	LORNG_BW06007_09012022	FA98677-9	9/1/2022	WG	N	25					
	BW10006	LORNG_BW10006_09012022	FA98677-17	9/1/2022	WG	N	25					
		LORNG_BW10006_09012022FD	FA98677-18	9/1/2022	WG	FD	25					
	BW17004	LORNG_BW17004_08312022	FA98677-10	8/31/2022	WG	N	25					
	BW17005	LORNG_BW17005_09012022	FA98677-11	9/1/2022	WG	N	25					
	BW18004	LORNG_BW18004_09012022	FA98677-19	9/1/2022	WG	N	25					
	BW22001	LORNG_BW22001_09012022	FA98677-20	9/1/2022	WG	N	25					
	CBW02	LORNG_CBW02_08312022	FA98677-1	8/31/2022	WG	N	25					
	FIELDQC	LORNG_EB040_08312022	FA98677-12	8/31/2022	WQ	EB	25					
		LORNG_EB041_08312022	FA98677-13	8/31/2022	WQ	EB	25					

Prepared by:AKN
Date:12/9/22
Checked by: CLC
Date: 12/14/2022

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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS		VOCs		SVOCs by SIM	SVOCs	
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	
						Fraction	T	T	T	T	T	T	
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
FA98677	FIELDQC	LORNG_EB042_09012022	FA98677-28	9/1/2022	WQ	EB	25						
		LORNG_EB043_09012022	FA98677-29	9/1/2022	WQ	EB	25						
FA98677	FMW3410	LORNG_FMW3410_09012022	FA98677-21	9/1/2022	WG	N	25						
	FMW3413	LORNG_FMW3413_09012022	FA98677-14	9/1/2022	WG	N	25						
	JBW7403	LORNG_JBW7403_08312022	FA98677-2	8/31/2022	WG	N	25						
	JBW7711	LORNG_JBW7711_09012022	FA98677-22	9/1/2022	WG	N	25						
	JBW7714	LORNG_JBW7714_08312022	FA98677-3	8/31/2022	WG	N	25						
	JBW7912	LORNG_JBW7912_150_09012022	FA98677-23	9/1/2022	WG	N	25						
		LORNG_JBW7912_40_09012022	FA98677-24	9/1/2022	WG	N	25						
	JMW0445	LORNG_JMW0445_08312022	FA98677-4	8/31/2022	WG	N	25						
FA98677	JMW7916	LORNG_JMW7916_09012022	FA98677-25	9/1/2022	WG	N	25						
	OW10005	LORNG_OW10005_08312022	FA98677-5	8/31/2022	WG	N	25						
		LORNG_OW10005_08312022FD	FA98677-6	8/31/2022	WG	FD	25						
	OW12002	LORNG_OW12002_09012022	FA98677-30	9/1/2022	WG	N	25						
	OW14004	LORNG_OW14004_08312022	FA98677-7	8/31/2022	WG	N	25						
		LORNG_OW14004_08312022FD	FA98677-15	8/31/2022	WG	FD	25						
	OW22003	LORNG_OW22003_09012022	FA98677-27	9/1/2022	WG	N	25						
	SB/OW12001	LORNG_OW12001_09012022	FA98677-26	9/1/2022	WG	N	25						
	SB/OW17001	LORNG_OW17001_08312022	FA98677-8	8/31/2022	WG	N	25						
FA98818	043-MW03	LORNG_043-MW03_09062022	FA98818-1	9/6/2022	WG	N	25						
	BW05007	LORNG_BW05007_09072022	FA98818-2	9/7/2022	WG	N	25						
	FIELDQC	LORNG_EB044_09082022	FA98818-4	9/8/2022	WQ	EB	25						
FA98818	JBW7314	LORNG_JBW7314_09072022	FA98818-3	9/7/2022	WG	N	25						
	MMW0007A	LORNG_MMW0007A_09082022	FA98818-5	9/8/2022	WG	N	25						
	MMW0007B	LORNG_MMW0007B_09082022	FA98818-6	9/8/2022	WG	N	25						
	MMW0132	LORNG_MMW0132_09082022	FA98818-7	9/8/2022	WG	N	25						
FA98981	BW06005	LORNG_BW06005_09142022	FA98981-12	9/14/2022	WG	N	25						
	BW06006	LORNG_BW06006_09142022	FA98981-13	9/14/2022	WG	N	25						
	FIELDQC	LORNG_EB045_09142022	FA98981-14	9/14/2022	WQ	EB	25						
		LORNG_EB046_09142022	FA98981-20	9/14/2022	WQ	EB	25						
	JBW7203A	LORNG_JBW7203A_09132022	FA98981-1	9/13/2022	WG	N	25						
	JBW7203B	LORNG_JBW7203B_09132022	FA98981-2	9/13/2022	WG	N	25						
	JBW7326A	LORNG_JBW7326A_09132022	FA98981-3	9/13/2022	WG	N	25						
	JBW7326B	LORNG_JBW7326B_09132022	FA98981-4	9/13/2022	WG	N	25						
	JMW1960	LORNG_JMW1960_09142022	FA98981-15	9/14/2022	WG	N	25						
	JMW1981	LORNG_JMW1981_09132022	FA98981-5	9/13/2022	WG	N	25						
	JMW1982	LORNG_JMW1982_09142022	FA98981-16	9/14/2022	WG	N	25						
	JMW7322	LORNG_JMW7322_09132022	FA98981-6	9/13/2022	WG	N	25						
	JPZ0348	LORNG_JPZ0348_09142022	FA98981-17	9/14/2022	WG	N	25						
	JPZ0349	LORNG_JPZ0349_09142022	FA98981-18	9/14/2022	WG	N	25						
	MMW0010	LORNG_MMW0010_09132022	FA98981-7	9/13/2022	WG	N	25						
		LORNG_MMW0010_09132022FD	FA98981-8	9/13/2022	WG	FD	25						
	MMW0011	LORNG_MMW0011_09132022	FA98981-9	9/13/2022	WG	N	25						
	MMW0017	LORNG_MMW0017_09132022	FA98981-10	9/13/2022	WG	N	25						
		LORNG_MMW0017_09132022FD	FA98981-11	9/13/2022	WG	FD	25						
	MMW0124	LORNG_MMW0124_09142022	FA98981-19	9/14/2022	WG	N	25						
	OW21005	LORNG_OW21005_09142022	FA98981-21	9/14/2022	WG	N	25						

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						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	
						Fraction	T	T	T	T	T	T	
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
FA98981	OW21005	LORNG_OW21005_09142022FD	FA98981-22	9/13/2022	WG	FD	25						
FA99047	BSMW3S	LORNG_BSMW3S_09182022	FA99047-23	9/18/2022	WG	N	25						
		LORNG_BSMW3S_09182022FD	FA99047-24	9/18/2022	WG	FD	25						
	BW01005	LORNG_BW01005_09182022	FA99047-11	9/18/2022	WG	N	25						
FA99047	BW17006	LORNG_BW17006_09182022	FA99047-12	9/18/2022	WG	N	25						
	FIELDQC	LORNG_EB047_09182022	FA99047-25	9/18/2022	WQ	EB	25						
		LORNG_EB048_09182022	FA99047-26	9/18/2022	WQ	EB	25						
		LORNG_EB049_09182022	FA99047-27	9/18/2022	WQ	EB	25						
	JBW7215B	LORNG_JBW7215B_09182022	FA99047-28	9/18/2022	WG	N	25						
	JBW7304B	LORNG_JBW7304B_09182022	FA99047-29	9/18/2022	WG	N	25						
	JBW8003B	LORNG_JMW8003B_09172022	FA99047-18	9/17/2022	WG	N	25						
	JBW8004B	LORNG_JMW8004B_09172022	FA99047-1	9/17/2022	WG	N	25						
	JMW-0602	LORNG_JMW0602_09182022	FA99047-13	9/18/2022	WG	N	25						
	JMW1762	LORNG_JMW1762_09182022	FA99047-14	9/18/2022	WG	N	25						
	JMW3102	LORNG_JMW3102_09182022	FA99047-15	9/18/2022	WG	N	25						
	JMW3501	LORNG_JMW3501_09182022	FA99047-16	9/18/2022	WG	N	25						
	JMW3601	LORNG_JMW3601_09182022	FA99047-17	9/18/2022	WG	N	25						
	JMW8011	LORNG_JMW8011_09172022	FA99047-2	9/17/2022	WG	N	25						
		LORNG_JMW8011_09172022FD	FA99047-3	9/17/2022	WG	FD	25						
	JPZ0686	LORNG_JPZ0686_09182022	FA99047-19	9/18/2022	WG	N	25						
	JPZ1382	LORNG_JPZ1382_09172022	FA99047-4	9/17/2022	WG	N	25						
		LORNG_JPZ1382_09172022FD	FA99047-5	9/17/2022	WG	FD	25						
	JPZ1780	LORNG_JPZ1780_09182022	FA99047-20	9/18/2022	WG	N	25						
	MMW8015	LORNG_MMW8015_09172022	FA99047-6	9/17/2022	WG	N	25						
	OW16001	LORNG_OW16001_09182022	FA99047-30	9/18/2022	WG	N	25						
	OW24001	LORNG_OW24001_09182022	FA99047-21	9/18/2022	WG	N	25						
	RFW1144	LORNG_RFW1144_09172022	FA99047-7	9/17/2022	WG	N	25						
	RFW1147	LORNG_RFW1147_09172022	FA99047-8	9/17/2022	WG	N	25						
	UNK-044	LORNG_UNK-044_09182022	FA99047-22	9/18/2022	WG	N	25						
	USGS2	LORNG_USGS-2_125_09172022	FA99047-9	9/17/2022	WG	N	25						
		LORNG_USGS-2_40_09172022	FA99047-10	9/17/2022	WG	N	25						

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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS		VOCs		SVOCs by SIM	SVOCs	
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	
						Fraction	T	T	T	T	T	T	
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
FA99090	044-RW01	LORNG_044-RW01_09192022	FA99090-1	9/19/2022	WG	N	25						
	AA07MW-01	LORNG_AA07MW01_09202022	FA99090-13	9/20/2022	WG	N	25						
	AA07MW-02	LORNG_AA07MW02_09202022	FA99090-14	9/20/2022	WG	N	25						
		LORNG_AA07MW02_09202022FD	FA99090-15	9/20/2022	WG	FD	25						
	FIELDQC	LORNG_EB050_09192022	FA99090-2	9/19/2022	WQ	EB	25						
		LORNG_EB051_09202022	FA99090-16	9/20/2022	WQ	EB	25						
	IDW-EFF	LORNG_IDW-EFF04_09202022	FA99090-17	9/20/2022	WD	N	25						
	JBW7335A	LORNG_JBW7335A_09192022	FA99090-3	9/19/2022	WG	N	25						
	JBW7336A	LORNG_JBW7336A_09192022	FA99090-4	9/19/2022	WG	N	25						
	JBW7347B	LORNG_JBW7347B_09192022	FA99090-5	9/19/2022	WG	N	25						
	JBW7710B	LORNG_JBW7710B_09202022	FA99090-18	9/20/2022	WG	N	25						
	JBW7738A	LORNG_JBW7738A_09202022	FA99090-19	9/20/2022	WG	N	25						
		LORNG_JBW7738A_09202022FD	FA99090-20	9/20/2022	WG	FD	25						
	JBW7738B	LORNG_JBW7738B_09202022	FA99090-25	9/20/2022	WG	N	25						
	JBW8009	LORNG_JBW8009_09192022	FA99090-6	9/19/2022	WG	N	25						
	JMW0301C	LORNG_JMW0301C_09192022	FA99090-7	9/19/2022	WG	N	25						
	JMW-0603	LORNG_JMW0603_09192022	FA99090-8	9/19/2022	WG	N	25						
	JMW0681	LORNG_JMW0681_09192022	FA99090-9	9/19/2022	WG	N	25						
		LORNG_JMW0681_09192022FD	FA99090-10	9/19/2022	WG	FD	25						
	JMW0683	LORNG_JMW0683_09192022	FA99090-11	9/19/2022	WG	N	25						
	JMW1565	LORNG_JMW1565_09202022	FA99090-21	9/20/2022	WG	N	25						
	JPZ0342	LORNG_JPZ0342_09192022	FA99090-12	9/19/2022	WG	N	25						
	MMW0006	LORNG_MMW0006_09202022	FA99090-22	9/20/2022	WG	N	25						
	MMW0326	LORNG_MMW0326_09202022	FA99090-23	9/20/2022	WG	N	25						
	OW17003	LORNG_OW17003_09202022	FA99090-24	9/19/2022	WG	N	25						
FA99400	AA11MW-01	LORNG_AA11MW01_09282022	FA99400-31	9/28/2022	WG	N	25						
	AA11MW-02	LORNG_AA11MW02_09282022	FA99400-21	9/28/2022	WG	N	25						
		LORNG_AA11MW02_09282022FD	FA99400-22	9/28/2022	WG	FD	25						
	AA18MW-01	LORNG_AA18MW01_09282022	FA99400-32	9/28/2022	WG	N	25						
	AA20MW-01	LORNG_AA20MW01_09282022	FA99400-23	9/28/2022	WG	N	25						
	AA20MW-02	LORNG_AA20MW02_09282022	FA99400-33	9/28/2022	WG	N	25						
	ASMW101	LORNG_ASMW101_09272022	FA99400-1	9/27/2022	WG	N	25						
	BW02002	LORNG_BW02002_09292022	FA99400-54	9/29/2022	WG	N	25						
	BW03001	LORNG_BW03001_09292022	FA99400-55	9/29/2022	WG	N	25						
	BW05011D	LORNG_BW05011D_09292022	FA99400-56	9/29/2022	WG	N	25						
	BW05011S	LORNG_BW05011S_09292022	FA99400-57	9/29/2022	WG	N	25						
	BW07001	LORNG_BW07001_09272022	FA99400-2	9/27/2022	WG	N	25						
	BW07002	LORNG_BW07002_09272022	FA99400-3	9/27/2022	WG	N	25						
	BW07003	LORNG_BW07003_09272022	FA99400-13	9/27/2022	WG	N	25						
	BW10007	LORNG_BW10007_09292022	FA99400-58	9/29/2022	WG	N	25						
	BW12005	LORNG_BW12005_09282022	FA99400-24	9/28/2022	WG	N	25						
	FIELDQC	LORNG_EB052_09272022	FA99400-4	9/27/2022	WQ	EB	25						
		LORNG_EB053_09272022	FA99400-14	9/27/2022	WQ	EB	25						
		LORNG_EB054_09272022	FA99400-15	9/27/2022	WQ	EB	25						
		LORNG_EB055_09272022	FA99400-42	9/27/2022	WQ	EB	25						
		LORNG_EB056_09282022	FA99400-43	9/28/2022	WQ	EB	25						
		LORNG_EB057_09282022	FA99400-44	9/28/2022	WQ	EB	25						
	FIELDQC	LORNG_EB058_09292022	FA99400-59	9/29/2022	WQ	EB	25						
		LORNG_EB059_09292022	FA99400-45	9/29/2022	WQ	EB	25						

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							PFAS		VOCs		SVOCs by SIM	SVOCs
						Method Class						
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D
						Fraction	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99400	FIELDQC	LORNG_EB060_09292022	FA99400-60	9/29/2022	WQ	EB	25					
		LORNG_EB068_10022022	FA99400-30	10/2/2022	WQ	EB	25					
		LORNG_EB069_10022022	FA99400-53	10/2/2022	WQ	EB	25					
	GC_BW002D	LORNG_GC_BW002D_09282022	FA99400-25	9/28/2022	WG	N	25					
	GC_BW002S	LORNG_GC_BW002S_09282022	FA99400-34	9/28/2022	WG	N	25					
	JBW7316	LORNG_JBW7316_09292022	FA99400-46	9/29/2022	WG	N	25					
	JBW7335B	LORNG_JBW7335B_09282022	FA99400-26	9/28/2022	WG	N	25					
	JBW7338B	LORNG_JBW7338B_09272022	FA99400-16	9/27/2022	WG	N	25					
	JBW7339A	LORNG_JBW7339A_09272022	FA99400-5	9/27/2022	WG	N	25					
	JBW7341B	LORNG_JBW7341B_09272022	FA99400-6	9/27/2022	WG	N	25					
	JBW7345B	LORNG_JBW7345B_09272022	FA99400-7	9/27/2022	WG	N	25					
	JBW7348	LORNG_JBW7348_09282022	FA99400-35	9/28/2022	WG	N	25					
	JBW7350	LORNG_JBW7350_09282022	FA99400-36	9/28/2022	WG	N	25					
	JBW7614	LORNG_JBW7614_09282022	FA99400-27	9/28/2022	WG	N	25					
	JBW7734	LORNG_JBW7734_09272022	FA99400-17	9/27/2022	WG	N	25					
	JBW7737A	LORNG_JBW7737A_09282022	FA99400-37	9/28/2022	WG	N	25					
	JBW7737B	LORNG_JBW7737B_09282022	FA99400-38	9/28/2022	WG	N	25					
	JBW7752	LORNG_JBW7752_09282022	FA99400-18	9/28/2022	WG	N	25					
	JBW7753A	LORNG_JBW7753A_09272022	FA99400-19	9/27/2022	WG	N	25					
	JMW0682	LORNG_JMW0682_09282022	FA99400-39	9/28/2022	WG	N	25					
	JMW0682	LORNG_JMW0682_09282022FD	FA99400-40	9/28/2022	WG	FD	25					
	JMW1665	LORNG_JMW1665_09272022	FA99400-8	9/27/2022	WG	N	25					
		LORNG_JMW1665_09272022FD	FA99400-9	9/27/2022	WG	FD	25					
	JMW1684	LORNG_JMW1684_09272022	FA99400-10	9/27/2022	WG	N	25					
	JMW6001	LORNG_JMW6001_09282022	FA99400-28	9/28/2022	WG	N	25					
		LORNG_JMW6001_09282022FD	FA99400-29	9/28/2022	WG	FD	25					
	JMW7913	LORNG_JMW7913_09292022	FA99400-11	9/29/2022	WG	N	25					
		LORNG_JMW7913_09292022FD	FA99400-12	9/29/2022	WG	FD	25					
	MMW0330	LORNG_MMW0330_09272022	FA99400-20	9/27/2022	WG	N	25					
	NP_BW001D	LORNG_NP_BW001D_09292022	FA99400-47	9/29/2022	WG	N	25					
	NP_BW001S	LORNG_NP_BW001S_09292022	FA99400-61	9/29/2022	WG	N	25					
	NP_OW001	LORNG_NP_OW001_09292022	FA99400-62	9/29/2022	WG	N	25					
	OW01002	LORNG_OW01002_09292022	FA99400-48	9/29/2022	WG	N	25					
	OW01003	LORNG_OW01003_09292022	FA99400-63	9/29/2022	WG	N	25					
	OW01004	LORNG_OW01004_09292022	FA99400-64	9/29/2022	WG	N	25					
	OW05002	LORNG_OW05002_09282022	FA99400-49	9/28/2022	WG	N	25					
	OW05004	LORNG_OW05004_09282022	FA99400-50	9/28/2022	WG	N	25					
		LORNG_OW05004_09282022FD	FA99400-51	9/28/2022	WG	FD	25					
	OW16002	LORNG_OW16002_09292022	FA99400-52	9/29/2022	WG	N	25					
	OW16003	LORNG_OW16003_09292022	FA99400-65	9/29/2022	WG	N	25					
	USMW025	LORNG_USMW025_09282022	FA99400-41	9/28/2022	WG	N	25					
FA99403	AA18MW-02	LORNG_AA18MW02_09302022	FA99403-13	9/30/2022	WG	N	25					
	BB_BW001	LORNG_BB_BW001_10012022	FA99403-25	10/1/2022	WG	N	25					
	BB_BW002	LORNG_BB_BW002_10012022	FA99403-26	10/1/2022	WG	N	25					
	BB_OW001	LORNG_BB_OW001_10012022	FA99403-36	10/1/2022	WG	N	25					
	BB_OW002	LORNG_BB_OW002_10012022	FA99403-37	10/1/2022	WG	N	25					
		LORNG_BB_OW002_10012022FD	FA99403-38	10/1/2022	WG	FD	25					
	BW01006	LORNG_BW01006_09302022	FA99403-1	9/30/2022	WG	N	25					
		LORNG_BW01006_09302022FD	FA99403-2	9/30/2022	WG	FD	25					

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						Method Class	PFAS		VOCs		SVOCs by SIM	SVOCs	
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	
						Fraction	T	T	T	T	T	T	
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
FA99403	BW01007	LORNG_BW01007_09302022	FA99403-14	9/30/2022	WG	N	25						
	BW01008	LORNG_BW01008_09302022	FA99403-15	9/30/2022	WG	N	25						
	BW01009	LORNG_BW01009_09302022	FA99403-3	9/30/2022	WG	N	25						
	BW02001	LORNG_BW02001_09302022	FA99403-4	9/30/2022	WG	N	25						
	BW03002	LORNG_BW03002_10012022	FA99403-39	10/1/2022	WG	N	25						
	BW05008	LORNG_BW05008_10022022	FA99403-57	10/2/2022	WG	N	25						
	BW05009	LORNG_BW05009_10022022	FA99403-58	10/2/2022	WG	N	25						
	BW05010	LORNG_BW05010_10022022	FA99403-59	10/2/2022	WG	N	25						
	BW06008	LORNG_BW06008_10012022	FA99403-45	10/1/2022	WG	N	25						
	BW08003	LORNG_BW08003_10012022	FA99403-40	10/1/2022	WG	N	25						
	BW09001	LORNG_BW09001_09302022	FA99403-5	9/30/2022	WG	N	25						
	BW10008	LORNG_BW10008_10022022	FA99403-60	10/2/2022	WG	N	25						
	BW12006	LORNG_BW12006_10012022	FA99403-27	10/1/2022	WG	N	25						
	BW13001	LORNG_BW13001_10022022	FA99403-61	10/2/2022	WG	N	25						
	BW13002	LORNG_BW13002_10022022	FA99403-62	10/2/2022	WG	N	25						
	BW13003	LORNG_BW13003_10022022	FA99403-46	10/2/2022	WG	N	25						
	BW16001	LORNG_BW16001_10012022	FA99403-47	10/1/2022	WG	N	25						
	BW16002	LORNG_BW16002_10012022	FA99403-41	10/1/2022	WG	N	25						
	BW18003	LORNG_BW18003_10022022	FA99403-63	10/2/2022	WG	N	25						
	BW18006	LORNG_BW18006_09302022	FA99403-16	9/30/2022	WG	N	25						
	BW18007	LORNG_BW18007_10012022	FA99403-48	10/1/2022	WG	N	25						
		LORNG_BW18007_10012022FD	FA99403-49	10/1/2022	WG	FD	25						
	BW18008	LORNG_BW18008_10012022	FA99403-28	10/1/2022	WG	N	25						
	BW18009	LORNG_BW18009_10012022	FA99403-42	10/1/2022	WG	N	25						
	BW18010	LORNG_BW18010_10022022	FA99403-50	10/2/2022	WG	N	25						
	BW20001	LORNG_BW20001_09302022	FA99403-17	9/30/2022	WG	N	25						
	BW20002	LORNG_BW20002_10022022	FA99403-64	10/2/2022	WG	N	25						
	EBGB_BW001	LORNG_EBGB_BW001_10012022	FA99403-30	10/1/2022	WG	N	25						
	EBGB_BW002	LORNG_EBGB_BW002_09302022	FA99403-20	9/30/2022	WG	N	25						
	EBGB_OW002	LORNG_EBGB_OW002_09302022	FA99403-21	9/30/2022	WG	N	25						
	FIELDQC	LORNG_EB061_09292022	FA99403-6	9/29/2022	WQ	EB	25						
		LORNG_EB062_09302022	FA99403-18	9/30/2022	WQ	EB	25						
		LORNG_EB063_09302022	FA99403-19	9/30/2022	WQ	EB	25						
		LORNG_EB064_09302022	FA99403-29	9/30/2022	WQ	EB	25						
		LORNG_EB065_10012022FD	FA99403-51	10/1/2022	WQ	EB	25						
	GC_BW001	LORNG_GC_BW001_10022022	FA99403-44	10/2/2022	WG	N	25						
	JBW7339B	LORNG_JBW7339B_10012022	FA99403-31	10/1/2022	WG	N	25						
	JMW-0505	LORNG_JMW0505_10012022	FA99403-32	10/1/2022	WG	N	25						
	OW02002	LORNG_OW02002_10032022	FA99403-68	10/3/2022	WG	N	25						
	OW05003	LORNG_OW05003_10012022	FA99403-54	10/1/2022	WG	N	25						
	OW07002	LORNG_OW07002_09302022	FA99403-7	9/30/2022	WG	N	25						
	OW07003	LORNG_OW07003_10022022	FA99403-55	10/2/2022	WG	N	25						
	OW08001	LORNG_OW08001_09302022	FA99403-8	9/30/2022	WG	N	25						
	OW08001	LORNG_OW08001_09302022FD	FA99403-9	9/30/2022	WG	FD	25						
	OW08002	LORNG_OW08002_09302022	FA99403-22	9/30/2022	WG	N	25						
	OW09001	LORNG_OW09001_09302022	FA99403-23	9/30/2022	WG	N	25						
	OW17002	LORNG_OW17002_10022022	FA99403-65	10/2/2022	WG	N	25						
	OW20001	LORNG_OW20001_09302022	FA99403-10	9/30/2022	WG	N	25						
	OW20002	LORNG_OW20002_09302022	FA99403-24	9/30/2022	WG	N	25						

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						Method Class						
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D
						Fraction	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99403	OW20003	LORNG_OW20003_10012022	FA99403-33	10/1/2022	WG	N	25					
	OW20004	LORNG_OW20004_10022022	FA99403-56	10/2/2022	WG	N	25					
	OW20005	LORNG_OW20005_10022022	FA99403-66	10/2/2022	WG	N	25					
	OW20006	LORNG_OW20006_10012022	FA99403-43	10/1/2022	WG	N	25					
	OW20007	LORNG_OW20007_09302022	FA99403-11	9/30/2022	WG	N	25					
	OW23001	LORNG_OW23001_10022022	FA99403-67	10/2/2022	WG	N	25					
	WBGB_BW001	LORNG_WBGB_BW001_10012022	FA99403-34	10/1/2022	WG	N	25					
		LORNG_WBGB_BW001_10012022FD	FA99403-35	10/1/2022	WG	FD	25					
	WWTP_WSW	LORNG_WWTP_WSW_09302022	FA99403-12	9/30/2022	WP	N	25					
FA99474	BW06007	LORNG_BW06007_10032022	FA99474-1	10/3/2022	WG	N	25					
	BW17005	LORNG_BW17005_10032022	FA99474-2	10/3/2022	WG	N	25					
	BW18004	LORNG_BW18004_10032022	FA99474-3	10/3/2022	WG	N	25					
	BW22001	LORNG_BW22001_10032022	FA99474-4	10/3/2022	WG	N	25					
	FIELDQC	LORNG_EB070_10032022	FA99474-5	10/3/2022	WQ	EB	25					
		LORNG_EB071_10032022	FA99474-6	10/3/2022	WQ	EB	25					
	OW07001	LORNG_OW07001_10042022	FA99474-7	10/4/2022	WG	N	25					
	OW10007	LORNG_OW10007_10032022	FA99474-8	10/3/2022	WG	N	25					
	OW12002	LORNG_OW12002_10032022	FA99474-9	10/3/2022	WG	N	25					
	OW22003	LORNG_OW22003_10032022	FA99474-10	10/3/2022	WG	N	25					
FC165	BW05011D	LORNG_BW05011D_10262022	FC165-1	10/26/2022	WG	N	25					
	BW05011S	LORNG_BW05011S_10262022	FC165-2	10/26/2022	WG	N	25					
	BW06006	LORNG_BW06006_10252022	FC165-3	10/25/2022	WG	N	25					
	BW17006	LORNG_BW17006_10262022	FC165-4	10/26/2022	WG	N	25					
	FIELDQC	LORNG_EB072_10262022	FC165-5	10/26/2022	WQ	EB	25					
		LORNG_EB073_10262022	FC165-6	10/26/2022	WQ	EB	25					
		LORNG_EB074_10252022	FC165-7	10/25/2022	WQ	EB	25					
		LORNG_EB075_10262022	FC165-8	10/26/2022	WQ	EB	25					
		LORNG_EB076_10272022	FC165-13	10/27/2022	WQ	EB	25					
		LORNG_EB077_10272022	FC165-14	10/27/2022	WQ	EB	25					
	GC_BW002D	LORNG_GC_BW002D_10252022	FC165-9	10/25/2022	WG	N	25					
	GC_BW002S	LORNG_GC_BW002S_10252022	FC165-10	10/25/2022	WG	N	25					
	NP_BW001D	LORNG_NP-BW001D_10272022	FC165-15	10/27/2022	WG	N	25					
	NP_BW001S	LORNG_NP-BW001S_10272022	FC165-16	10/27/2022	WG	N	25					
	NP_OW001	LORNG_NP-OW001_10272022	FC165-17	10/27/2022	WG	N	25		2	72	18	56
	OW17003	LORNG_OW17003_10272022	FC165-11	10/27/2022	WG	N	25		2	72		
	OW24001	LORNG_OW24001_10262022	FC165-12	10/26/2022	WG	N	25		2	72	18	56

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS		VOCs		SVOCs by SIM	SVOCs
						Method Class						
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D
						Fraction	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP5064	BW05007	LORNG_BW05007_09072022_K	SP5064-1	9/7/2022	WG	N			2	72		
	FIELDQC	LORNG_TB12_08312022	SP5064-7	9/1/2022	WQ	TB			2	72	18	56
	JBW7711	LORNG_JBW7711_09012022_K	SP5064-2	9/1/2022	WG	N			2	72		
		LORNG_JBW7711_09012022FD_K	SP5064-3	9/1/2022	WG	FD						
	JMW0445	LORNG_JMW0445_08312022_K	SP5064-4	8/31/2022	WG	N			2	72	19	56
SP5064	SB/OW12001	LORNG_OW12001_09012022_K	SP5064-5	9/1/2022	WG	N			2	72		
	SB/OW17001	LORNG_OW17001_08312022_K	SP5064-6	8/31/2022	WG	N			2	72	18	56
SP5209	BW06005	LORNG_BW06005_09142022_K	SP5209-1	9/14/2022	WG	N					1	
	FIELDQC	LORNG_TB13_09152022	SP5209-6	9/15/2022	WQ	TB					1	
	JPZ0349	LORNG_JPZ0349_09142022_K	SP5209-2	9/14/2022	WG	N			2	72	18	56
	MMW0124	LORNG_MMW0124_09132022_K	SP5209-3	9/13/2022	WG	N					1	
		LORNG_MMW0124_09132022FD_K	SP5209-4	9/13/2022	WG	FD			2	72	18	56
	OW21005	LORNG_OW21005_09142022_K	SP5209-5	9/14/2022	WG	N			2	72	18	56
SP5253	JMW8011	LORNG_JMW8011_09172022_K	SP5253-1	9/17/2022	WG	N			2	72	19	56
	OW16001	LORNG_OW16001_09182022_K	SP5253-3	9/18/2022	WG	N			2	72		
	OW24001	LORNG_OW24001_09182022_K	SP5253-2	9/18/2022	WG	N			2	72	18	56
SP5278	AA07MW-01	LORNG_AA07MW01_09202022_K	SP5278-2	9/20/2022	WG	N			2	72		
	FIELDQC	LORNG_TB14_09202022	SP5278-1	9/20/2022	WQ	TB			2	72	19	56
	JMW0683	LORNG_JMW0683_09192022_K	SP5278-3	9/19/2022	WG	N			2	72	19	56
SP5537	FIELDQC	LORNG_TB15_09302022	SP5537-6	9/30/2022	WQ	TB			2	72		
	JBW7338B	LORNG_JBW7338B_09272022_K	SP5537-5	9/27/2022	WG	N			2	72		
	JBW7348	LORNG_JBW7348_09282022_K	SP5537-1	9/28/2022	WG	N			2	72		
SP5537	JBW7348	LORNG_JBW7348_09282022FD_K	SP5537-2	9/28/2022	WG	FD						
	JBW7737B	LORNG_JBW7737B_09282022_K	SP5537-3	9/28/2022	WG	N						
		LORNG_JBW7737B_09282022FD_K	SP5537-4	9/28/2022	WG	FD						
SP5577	BW01006	LORNG_BW01006_09302022_K	SP5577-1	9/30/2022	WG	N						
		LORNG_BW01006_09302022FD_K	SP5577-2	9/30/2022	WG	FD			2	72		
	BW01008	LORNG_BW01008_09302022_K	SP5577-3	9/30/2022	WG	N			2	72		
	BW01009	LORNG_BW01009_09302022_K	SP5577-4	9/30/2022	WG	N			2	72	19	56
	BW12006	LORNG_BW12006_10012022_K	SP5577-5	10/1/2022	WG	N			2	72	19	56
	FIELDQC	LORNG_TB16_10032022	SP5577-9	10/3/2022	WQ	TB			2	72	19	56
	JBW7339B	LORNG_JBW7339B_10012022_K	SP5577-6	10/1/2022	WG	N			2	72	18	56
	OW07003	LORNG_OW07003_10022022_K	SP5577-7	10/2/2022	WG	N						
	OW08002	LORNG_OW08002_09302022_K	SP5577-8	9/30/2022	WG	N						
SP6227	OW24001	LORNG_OW24001_10262022_K	SP6227-1	10/26/2022	WG	N						
200-64869	BW05007	LORNG_BW05007_09072022_E	200-64869-1	9/7/2022	WG	N						
	SB/OW12001	LORNG_OW12001_09012022_E	200-64869-2	9/1/2022	WG	N						
200-64993	BW06005	LORNG_BW06005_09142022_E	200-64993-1	9/14/2022	WG	N						
	MMW0124	LORNG_MMW0124_09132022_E	200-64993-2	9/13/2022	WG	N						
		LORNG_MMW0124_09132022FD_E	200-64993-3FD	9/13/2022	WG	FD						
	OW21005	LORNG_OW21005_09142022_E	200-64993-4	9/14/2022	WG	N						
200-64994	JMW8011	LORNG_JMW8011_09172022_E	200-64994-1	9/17/2022	WG	N						
	OW16001	LORNG_OW16001_09182022_E	200-64994-2	9/18/2022	WG	N						
200-65216	JBW7338B	LORNG_JBW7338B_09272022_E	200-65216-2	9/27/2022	WG	N						
	JBW7737B	LORNG_JBW7737B_09282022_E	200-65216-1	9/28/2022	WG	N						
200-65217	BW12006	LORNG_BW12006_10012022_E	200-65217-1	10/1/2022	WG	N						
	JBW7339B	LORNG_JBW7339B_10012022_E	200-65217-2	10/1/2022	WG	N						
Notes:												
N = Total												
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank												
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water												
ParamCount = Number of target analytes reported												

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						Metho	PCBs	Pesticides	Metals	Metals		Perchlorate
						Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
						F	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
2210025	BW12005	LORNG_BW12005_09282022SPLIT	2210025-01	9/28/2022	WG							
	BW16002	LORNG_BW16002_10012022SPLIT	2210025-02	10/1/2022	WG							
	OW17002	LORNG_OW17002_10022022SPLIT	2210025-03	10/2/2022	WG							
2209096	OW12002	LORNG-OW12002-09012022SPLIT	2209096-01	9/1/2022	WG							
FA98397	FIELDQC	LORNG_EB032_08232022	FA98397-1	8/23/2022	WQ							
		LORNG_EB033_08232022	FA98397-2	8/23/2022	WQ							
		LORNG_EB034_08242022	FA98397-3	8/24/2022	WQ							
	JMW0880	LORNG_JMW0880_08232022	FA98397-4	8/23/2022	WG							
	JMW0980	LORNG_JMW0980_08232022	FA98397-5	8/23/2022	WG							
	JMW0982	LORNG_JMW0982_08232022	FA98397-6	8/23/2022	WG							
	JMW0991	LORNG_JMW0991_08232022	FA98397-7	8/23/2022	WG							
	LF2MW2	LORNG_LF2MW2_08222022	FA98397-8	8/22/2022	WG							
	MMW0002	LORNG_MMW0002_08222022	FA98397-9	8/22/2022	WG							
	OW07003	LORNG_OW07003_08232022	FA98397-10	8/23/2022	WG							
FA98576	JMW-0416B	LORNG_JMW0416B_08302022	FA98576-1	8/30/2022	WG							
	JMW-0806	LORNG_JMW0806_08302022	FA98576-2	8/30/2022	WG							
	JMW0961	LORNG_JMW0961_08292022	FA98576-3	8/29/2022	WG							
	JMW0992	LORNG_JMW0992_08302022	FA98576-13	8/30/2022	WG							
	JPZ7808	LORNG_JPZ7808_08302022	FA98576-4	8/30/2022	WG							
	LF3MW3	LORNG_LF3MW3_08292022	FA98576-5	8/29/2022	WG							
	LF3MW4	LORNG_LF3MW4_08292022	FA98576-6	8/29/2022	WG							
	MMW0009	LORNG_MMW0009_08302022	FA98576-7	8/30/2022	WG							
	MMW0018B	LORNG_MMW0018B_08302022	FA98576-8	8/30/2022	WG							
	MMW0422	LORNG_MMW0422_08302022	FA98576-9	8/30/2022	WG							
	MMW0423	LORNG_MMW0423_08302022	FA98576-10	8/30/2022	WG							
	OW22001	LORNG_OW22001_08292022	FA98576-11	8/29/2022	WG							
	RFW-38	LORNG_RFW-38_08302022	FA98576-12	8/30/2022	WG							
FA98616	BW14005	LORNG_BW14005_08312022	FA98616-1	8/31/2022	WG							
	FIELDQC	LORNG_EB035_08302022	FA98616-2	8/30/2022	WQ							
		LORNG_EB036_08302022	FA98616-3	8/30/2022	WQ							
		LORNG_EB037_08302022	FA98616-4	8/30/2022	WQ							
		LORNG_EB038_08302022	FA98616-5	8/30/2022	WQ							
		LORNG_EB039_08312022	FA98616-6	8/31/2022	WQ							
	JMW0241A	LORNG_JMW0241A_08302022	FA98616-7	8/30/2022	WG							
	JMW0882	LORNG_JMW0882_08302022	FA98616-8	8/30/2022	WG							
	JMW0941	LORNG_JMW0941_08302022	FA98616-9	8/30/2022	WG							
	JPZ7704	LORNG_JPZ7704_08302022	FA98616-10	8/30/2022	WG							
	MMW0015	LORNG_MMW0015_08302022	FA98616-11	8/30/2022	WG							
	OW10007	LORNG_OW10007_08312022	FA98616-12	8/31/2022	WG							
FA98677	BW05006	LORNG_BW05006_09012022	FA98677-16	9/1/2022	WG							
	BW06007	LORNG_BW06007_09012022	FA98677-9	9/1/2022	WG							
	BW10006	LORNG_BW10006_09012022	FA98677-17	9/1/2022	WG							
		LORNG_BW10006_09012022FD	FA98677-18	9/1/2022	WG							
	BW17004	LORNG_BW17004_08312022	FA98677-10	8/31/2022	WG							
	BW17005	LORNG_BW17005_09012022	FA98677-11	9/1/2022	WG							
	BW18004	LORNG_BW18004_09012022	FA98677-19	9/1/2022	WG							
	BW22001	LORNG_BW22001_09012022	FA98677-20	9/1/2022	WG							
	CBW02	LORNG_CBW02_08312022	FA98677-1	8/31/2022	WG							
	FIELDQC	LORNG_EB040_08312022	FA98677-12	8/31/2022	WQ							
		LORNG_EB041_08312022	FA98677-13	8/31/2022	WQ							

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						Metho	PCBs	Pesticides	Metals	Metals		Perchlorate
						Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
						F	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98677	FIELDQC	LORNG_EB042_09012022	FA98677-28	9/1/2022	WQ							
		LORNG_EB043_09012022	FA98677-29	9/1/2022	WQ							
FA98677	FMW3410	LORNG_FMW3410_09012022	FA98677-21	9/1/2022	WG							
	FMW3413	LORNG_FMW3413_09012022	FA98677-14	9/1/2022	WG							
	JBW7403	LORNG_JBW7403_08312022	FA98677-2	8/31/2022	WG							
	JBW7711	LORNG_JBW7711_09012022	FA98677-22	9/1/2022	WG							
	JBW7714	LORNG_JBW7714_08312022	FA98677-3	8/31/2022	WG							
	JBW7912	LORNG_JBW7912_150_09012022	FA98677-23	9/1/2022	WG							
		LORNG_JBW7912_40_09012022	FA98677-24	9/1/2022	WG							
	JMW0445	LORNG_JMW0445_08312022	FA98677-4	8/31/2022	WG							
FA98677	JMW7916	LORNG_JMW7916_09012022	FA98677-25	9/1/2022	WG							
	OW10005	LORNG_OW10005_08312022	FA98677-5	8/31/2022	WG							
		LORNG_OW10005_08312022FD	FA98677-6	8/31/2022	WG							
	OW12002	LORNG_OW12002_09012022	FA98677-30	9/1/2022	WG							
	OW14004	LORNG_OW14004_08312022	FA98677-7	8/31/2022	WG							
		LORNG_OW14004_08312022FD	FA98677-15	8/31/2022	WG							
	OW22003	LORNG_OW22003_09012022	FA98677-27	9/1/2022	WG							
	SB/OW12001	LORNG_OW12001_09012022	FA98677-26	9/1/2022	WG							
	SB/OW17001	LORNG_OW17001_08312022	FA98677-8	8/31/2022	WG							
FA98818	043-MW03	LORNG_043-MW03_09062022	FA98818-1	9/6/2022	WG							
	BW05007	LORNG_BW05007_09072022	FA98818-2	9/7/2022	WG							
	FIELDQC	LORNG_EB044_09082022	FA98818-4	9/8/2022	WQ							
FA98818	JBW7314	LORNG_JBW7314_09072022	FA98818-3	9/7/2022	WG							
	MMW0007A	LORNG_MMW0007A_09082022	FA98818-5	9/8/2022	WG							
	MMW0007B	LORNG_MMW0007B_09082022	FA98818-6	9/8/2022	WG							
	MMW0132	LORNG_MMW0132_09082022	FA98818-7	9/8/2022	WG							
FA98981	BW06005	LORNG_BW06005_09142022	FA98981-12	9/14/2022	WG							
	BW06006	LORNG_BW06006_09142022	FA98981-13	9/14/2022	WG							
	FIELDQC	LORNG_EB045_09142022	FA98981-14	9/14/2022	WQ							
		LORNG_EB046_09142022	FA98981-20	9/14/2022	WQ							
	JBW7203A	LORNG_JBW7203A_09132022	FA98981-1	9/13/2022	WG							
	JBW7203B	LORNG_JBW7203B_09132022	FA98981-2	9/13/2022	WG							
	JBW7326A	LORNG_JBW7326A_09132022	FA98981-3	9/13/2022	WG							
	JBW7326B	LORNG_JBW7326B_09132022	FA98981-4	9/13/2022	WG							
	JMW1960	LORNG_JMW1960_09142022	FA98981-15	9/14/2022	WG							
	JMW1981	LORNG_JMW1981_09132022	FA98981-5	9/13/2022	WG							
	JMW1982	LORNG_JMW1982_09142022	FA98981-16	9/14/2022	WG							
	JMW7322	LORNG_JMW7322_09132022	FA98981-6	9/13/2022	WG							
	JPZ0348	LORNG_JPZ0348_09142022	FA98981-17	9/14/2022	WG							
	JPZ0349	LORNG_JPZ0349_09142022	FA98981-18	9/14/2022	WG							
	MMW0010	LORNG_MMW0010_09132022	FA98981-7	9/13/2022	WG							
		LORNG_MMW0010_09132022FD	FA98981-8	9/13/2022	WG							
	MMW0011	LORNG_MMW0011_09132022	FA98981-9	9/13/2022	WG							
	MMW0017	LORNG_MMW0017_09132022	FA98981-10	9/13/2022	WG							
		LORNG_MMW0017_09132022FD	FA98981-11	9/13/2022	WG							
	MMW0124	LORNG_MMW0124_09142022	FA98981-19	9/14/2022	WG							
	OW21005	LORNG_OW21005_09142022	FA98981-21	9/14/2022	WG							

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						PCBs	Pesticides	Metals	Metals		Perchlorate
					Metho						
					Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
					F	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98981	OW21005	LORNG_OW21005_09142022FD	FA98981-22	9/13/2022	WG						
FA99047	BSMW3S	LORNG_BSMW3S_09182022	FA99047-23	9/18/2022	WG						
		LORNG_BSMW3S_09182022FD	FA99047-24	9/18/2022	WG						
	BW01005	LORNG_BW01005_09182022	FA99047-11	9/18/2022	WG						
FA99047	BW17006	LORNG_BW17006_09182022	FA99047-12	9/18/2022	WG						
	FIELDQC	LORNG_EB047_09182022	FA99047-25	9/18/2022	WQ						
		LORNG_EB048_09182022	FA99047-26	9/18/2022	WQ						
		LORNG_EB049_09182022	FA99047-27	9/18/2022	WQ						
	JBW7215B	LORNG_JBW7215B_09182022	FA99047-28	9/18/2022	WG						
	JBW7304B	LORNG_JBW7304B_09182022	FA99047-29	9/18/2022	WG						
	JBW8003B	LORNG_JMW8003B_09172022	FA99047-18	9/17/2022	WG						
	JBW8004B	LORNG_JMW8004B_09172022	FA99047-1	9/17/2022	WG						
	JMW-0602	LORNG_JMW0602_09182022	FA99047-13	9/18/2022	WG						
	JMW1762	LORNG_JMW1762_09182022	FA99047-14	9/18/2022	WG						
	JMW3102	LORNG_JMW3102_09182022	FA99047-15	9/18/2022	WG						
	JMW3501	LORNG_JMW3501_09182022	FA99047-16	9/18/2022	WG						
	JMW3601	LORNG_JMW3601_09182022	FA99047-17	9/18/2022	WG						
FA99047	JMW8011	LORNG_JMW8011_09172022	FA99047-2	9/17/2022	WG						
		LORNG_JMW8011_09172022FD	FA99047-3	9/17/2022	WG						
	JPZ0686	LORNG_JPZ0686_09182022	FA99047-19	9/18/2022	WG						
	JPZ1382	LORNG_JPZ1382_09172022	FA99047-4	9/17/2022	WG						
		LORNG_JPZ1382_09172022FD	FA99047-5	9/17/2022	WG						
	JPZ1780	LORNG_JPZ1780_09182022	FA99047-20	9/18/2022	WG						
	MMW8015	LORNG_MMW8015_09172022	FA99047-6	9/17/2022	WG						
	OW16001	LORNG_OW16001_09182022	FA99047-30	9/18/2022	WG						
	OW24001	LORNG_OW24001_09182022	FA99047-21	9/18/2022	WG						
	RFW1144	LORNG_RFW1144_09172022	FA99047-7	9/17/2022	WG						
	RFW1147	LORNG_RFW1147_09172022	FA99047-8	9/17/2022	WG						
	UNK-044	LORNG_UNK-044_09182022	FA99047-22	9/18/2022	WG						
	USGS2	LORNG_USGS-2_125_09172022	FA99047-9	9/17/2022	WG						
		LORNG_USGS-2_40_09172022	FA99047-10	9/17/2022	WG						

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Former Loring Air Force Base, Limestone, Maine

					Metho	PCBs	Pesticides	Metals	Metals		Perchlorate
					Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
					F	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99090	044-RW01	LORNG_044-RW01_09192022	FA99090-1	9/19/2022	WG						
	AA07MW-01	LORNG_AA07MW01_09202022	FA99090-13	9/20/2022	WG						
	AA07MW-02	LORNG_AA07MW02_09202022	FA99090-14	9/20/2022	WG						
		LORNG_AA07MW02_09202022FD	FA99090-15	9/20/2022	WG						
	FIELDQC	LORNG_EB050_09192022	FA99090-2	9/19/2022	WQ						
		LORNG_EB051_09202022	FA99090-16	9/20/2022	WQ						
	IDW-EFF	LORNG_IDW-EFF04_09202022	FA99090-17	9/20/2022	WD						
	JBW7335A	LORNG_JBW7335A_09192022	FA99090-3	9/19/2022	WG						
	JBW7336A	LORNG_JBW7336A_09192022	FA99090-4	9/19/2022	WG						
	JBW7347B	LORNG_JBW7347B_09192022	FA99090-5	9/19/2022	WG						
	JBW7710B	LORNG_JBW7710B_09202022	FA99090-18	9/20/2022	WG						
	JBW7738A	LORNG_JBW7738A_09202022	FA99090-19	9/20/2022	WG						
		LORNG_JBW7738A_09202022FD	FA99090-20	9/20/2022	WG						
	JBW7738B	LORNG_JBW7738B_09202022	FA99090-25	9/20/2022	WG						
	JBW8009	LORNG_JBW8009_09192022	FA99090-6	9/19/2022	WG						
	JMW0301C	LORNG_JMW0301C_09192022	FA99090-7	9/19/2022	WG						
	JMW-0603	LORNG_JMW0603_09192022	FA99090-8	9/19/2022	WG						
	JMW0681	LORNG_JMW0681_09192022	FA99090-9	9/19/2022	WG						
		LORNG_JMW0681_09192022FD	FA99090-10	9/19/2022	WG						
	JMW0683	LORNG_JMW0683_09192022	FA99090-11	9/19/2022	WG						
	JMW1565	LORNG_JMW1565_09202022	FA99090-21	9/20/2022	WG						
	JPZ0342	LORNG_JPZ0342_09192022	FA99090-12	9/19/2022	WG						
	MMW0006	LORNG_MMW0006_09202022	FA99090-22	9/20/2022	WG						
	MMW0326	LORNG_MMW0326_09202022	FA99090-23	9/20/2022	WG						
	OW17003	LORNG_OW17003_09202022	FA99090-24	9/19/2022	WG						
FA99400	AA11MW-01	LORNG_AA11MW01_09282022	FA99400-31	9/28/2022	WG						
	AA11MW-02	LORNG_AA11MW02_09282022	FA99400-21	9/28/2022	WG						
		LORNG_AA11MW02_09282022FD	FA99400-22	9/28/2022	WG						
	AA18MW-01	LORNG_AA18MW01_09282022	FA99400-32	9/28/2022	WG						
	AA20MW-01	LORNG_AA20MW01_09282022	FA99400-23	9/28/2022	WG						
	AA20MW-02	LORNG_AA20MW02_09282022	FA99400-33	9/28/2022	WG						
	ASMW101	LORNG_ASMW101_09272022	FA99400-1	9/27/2022	WG						
	BW02002	LORNG_BW02002_09292022	FA99400-54	9/29/2022	WG						
	BW03001	LORNG_BW03001_09292022	FA99400-55	9/29/2022	WG						
	BW05011D	LORNG_BW05011D_09292022	FA99400-56	9/29/2022	WG						
	BW05011S	LORNG_BW05011S_09292022	FA99400-57	9/29/2022	WG						
	BW07001	LORNG_BW07001_09272022	FA99400-2	9/27/2022	WG						
	BW07002	LORNG_BW07002_09272022	FA99400-3	9/27/2022	WG						
	BW07003	LORNG_BW07003_09272022	FA99400-13	9/27/2022	WG						
	BW10007	LORNG_BW10007_09292022	FA99400-58	9/29/2022	WG						
	BW12005	LORNG_BW12005_09282022	FA99400-24	9/28/2022	WG						
	FIELDQC	LORNG_EB052_09272022	FA99400-4	9/27/2022	WQ						
		LORNG_EB053_09272022	FA99400-14	9/27/2022	WQ						
		LORNG_EB054_09272022	FA99400-15	9/27/2022	WQ						
		LORNG_EB055_09272022	FA99400-42	9/27/2022	WQ						
		LORNG_EB056_09282022	FA99400-43	9/28/2022	WQ						
		LORNG_EB057_09282022	FA99400-44	9/28/2022	WQ						
	FIELDQC	LORNG_EB058_09292022	FA99400-59	9/29/2022	WQ						
		LORNG_EB059_09292022	FA99400-45	9/29/2022	WQ						

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						Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
						F	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99400	FIELDQC	LORNG_EB060_09292022	FA99400-60	9/29/2022	WQ							
		LORNG_EB068_10022022	FA99400-30	10/2/2022	WQ							
		LORNG_EB069_10022022	FA99400-53	10/2/2022	WQ							
	GC_BW002D	LORNG_GC_BW002D_09282022	FA99400-25	9/28/2022	WG							
	GC_BW002S	LORNG_GC_BW002S_09282022	FA99400-34	9/28/2022	WG							
	JBW7316	LORNG_JBW7316_09292022	FA99400-46	9/29/2022	WG							
	JBW7335B	LORNG_JBW7335B_09282022	FA99400-26	9/28/2022	WG							
	JBW7338B	LORNG_JBW7338B_09272022	FA99400-16	9/27/2022	WG							
	JBW7339A	LORNG_JBW7339A_09272022	FA99400-5	9/27/2022	WG							
	JBW7341B	LORNG_JBW7341B_09272022	FA99400-6	9/27/2022	WG							
	JBW7345B	LORNG_JBW7345B_09272022	FA99400-7	9/27/2022	WG							
	JBW7348	LORNG_JBW7348_09282022	FA99400-35	9/28/2022	WG							
	JBW7350	LORNG_JBW7350_09282022	FA99400-36	9/28/2022	WG							
	JBW7614	LORNG_JBW7614_09282022	FA99400-27	9/28/2022	WG							
	JBW7734	LORNG_JBW7734_09272022	FA99400-17	9/27/2022	WG							
	JBW7737A	LORNG_JBW7737A_09282022	FA99400-37	9/28/2022	WG							
	JBW7737B	LORNG_JBW7737B_09282022	FA99400-38	9/28/2022	WG							
	JBW7752	LORNG_JBW7752_09282022	FA99400-18	9/28/2022	WG							
	JBW7753A	LORNG_JBW7753A_09272022	FA99400-19	9/27/2022	WG							
	JMW0682	LORNG_JMW0682_09282022	FA99400-39	9/28/2022	WG							
	JMW0682	LORNG_JMW0682_09282022FD	FA99400-40	9/28/2022	WG							
	JMW1665	LORNG_JMW1665_09272022	FA99400-8	9/27/2022	WG							
		LORNG_JMW1665_09272022FD	FA99400-9	9/27/2022	WG							
	JMW1684	LORNG_JMW1684_09272022	FA99400-10	9/27/2022	WG							
	JMW6001	LORNG_JMW6001_09282022	FA99400-28	9/28/2022	WG							
		LORNG_JMW6001_09282022FD	FA99400-29	9/28/2022	WG							
	JMW7913	LORNG_JMW7913_09292022	FA99400-11	9/29/2022	WG							
		LORNG_JMW7913_09292022FD	FA99400-12	9/29/2022	WG							
	MMW0330	LORNG_MMW0330_09272022	FA99400-20	9/27/2022	WG							
	NP_BW001D	LORNG_NP_BW001D_09292022	FA99400-47	9/29/2022	WG							
	NP_BW001S	LORNG_NP_BW001S_09292022	FA99400-61	9/29/2022	WG							
	NP_OW001	LORNG_NP_OW001_09292022	FA99400-62	9/29/2022	WG							
	OW01002	LORNG_OW01002_09292022	FA99400-48	9/29/2022	WG							
	OW01003	LORNG_OW01003_09292022	FA99400-63	9/29/2022	WG							
	OW01004	LORNG_OW01004_09292022	FA99400-64	9/29/2022	WG							
	OW05002	LORNG_OW05002_09282022	FA99400-49	9/28/2022	WG							
	OW05004	LORNG_OW05004_09282022	FA99400-50	9/28/2022	WG							
		LORNG_OW05004_09282022FD	FA99400-51	9/28/2022	WG							
	OW16002	LORNG_OW16002_09292022	FA99400-52	9/29/2022	WG							
	OW16003	LORNG_OW16003_09292022	FA99400-65	9/29/2022	WG							
	USMW025	LORNG_USMW025_09282022	FA99400-41	9/28/2022	WG							
FA99403	AA18MW-02	LORNG_AA18MW02_09302022	FA99403-13	9/30/2022	WG							
	BB_BW001	LORNG_BB_BW001_10012022	FA99403-25	10/1/2022	WG							
	BB_BW002	LORNG_BB_BW002_10012022	FA99403-26	10/1/2022	WG							
	BB_OW001	LORNG_BB_OW001_10012022	FA99403-36	10/1/2022	WG							
	BB_OW002	LORNG_BB_OW002_10012022	FA99403-37	10/1/2022	WG							
		LORNG_BB_OW002_10012022FD	FA99403-38	10/1/2022	WG							
	BW01006	LORNG_BW01006_09302022	FA99403-1	9/30/2022	WG							
		LORNG_BW01006_09302022FD	FA99403-2	9/30/2022	WG							

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						Metho	PCBs	Pesticides	Metals	Metals		Perchlorate
						Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
						F	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99403	BW01007	LORNG_BW01007_09302022	FA99403-14	9/30/2022	WG							
	BW01008	LORNG_BW01008_09302022	FA99403-15	9/30/2022	WG							
	BW01009	LORNG_BW01009_09302022	FA99403-3	9/30/2022	WG							
	BW02001	LORNG_BW02001_09302022	FA99403-4	9/30/2022	WG							
	BW03002	LORNG_BW03002_10012022	FA99403-39	10/1/2022	WG							
	BW05008	LORNG_BW05008_10022022	FA99403-57	10/2/2022	WG							
	BW05009	LORNG_BW05009_10022022	FA99403-58	10/2/2022	WG							
	BW05010	LORNG_BW05010_10022022	FA99403-59	10/2/2022	WG							
	BW06008	LORNG_BW06008_10012022	FA99403-45	10/1/2022	WG							
	BW08003	LORNG_BW08003_10012022	FA99403-40	10/1/2022	WG							
	BW09001	LORNG_BW09001_09302022	FA99403-5	9/30/2022	WG							
	BW10008	LORNG_BW10008_10022022	FA99403-60	10/2/2022	WG							
	BW12006	LORNG_BW12006_10012022	FA99403-27	10/1/2022	WG							
	BW13001	LORNG_BW13001_10022022	FA99403-61	10/2/2022	WG							
	BW13002	LORNG_BW13002_10022022	FA99403-62	10/2/2022	WG							
	BW13003	LORNG_BW13003_10022022	FA99403-46	10/2/2022	WG							
	BW16001	LORNG_BW16001_10012022	FA99403-47	10/1/2022	WG							
	BW16002	LORNG_BW16002_10012022	FA99403-41	10/1/2022	WG							
	BW18003	LORNG_BW18003_10022022	FA99403-63	10/2/2022	WG							
	BW18006	LORNG_BW18006_09302022	FA99403-16	9/30/2022	WG							
	BW18007	LORNG_BW18007_10012022	FA99403-48	10/1/2022	WG							
		LORNG_BW18007_10012022FD	FA99403-49	10/1/2022	WG							
	BW18008	LORNG_BW18008_10012022	FA99403-28	10/1/2022	WG							
	BW18009	LORNG_BW18009_10012022	FA99403-42	10/1/2022	WG							
	BW18010	LORNG_BW18010_10022022	FA99403-50	10/2/2022	WG							
	BW20001	LORNG_BW20001_09302022	FA99403-17	9/30/2022	WG							
	BW20002	LORNG_BW20002_10022022	FA99403-64	10/2/2022	WG							
	EBGB_BW001	LORNG_EBGB_BW001_10012022	FA99403-30	10/1/2022	WG							
	EBGB_BW002	LORNG_EBGB_BW002_09302022	FA99403-20	9/30/2022	WG							
	EBGB_OW002	LORNG_EBGB_OW002_09302022	FA99403-21	9/30/2022	WG							
	FIELDQC	LORNG_EB061_09292022	FA99403-6	9/29/2022	WQ							
		LORNG_EB062_09302022	FA99403-18	9/30/2022	WQ							
		LORNG_EB063_09302022	FA99403-19	9/30/2022	WQ							
		LORNG_EB064_09302022	FA99403-29	9/30/2022	WQ							
		LORNG_EB065_10012022FD	FA99403-51	10/1/2022	WQ							
	GC_BW001	LORNG_GC_BW001_10022022	FA99403-44	10/2/2022	WG							
	JBW7339B	LORNG_JBW7339B_10012022	FA99403-31	10/1/2022	WG							
	JMW-0505	LORNG_JMW0505_10012022	FA99403-32	10/1/2022	WG							
	OW02002	LORNG_OW02002_10032022	FA99403-68	10/3/2022	WG							
	OW05003	LORNG_OW05003_10012022	FA99403-54	10/1/2022	WG							
	OW07002	LORNG_OW07002_09302022	FA99403-7	9/30/2022	WG							
	OW07003	LORNG_OW07003_10022022	FA99403-55	10/2/2022	WG							
	OW08001	LORNG_OW08001_09302022	FA99403-8	9/30/2022	WG							
	OW08001	LORNG_OW08001_09302022FD	FA99403-9	9/30/2022	WG							
	OW08002	LORNG_OW08002_09302022	FA99403-22	9/30/2022	WG							
	OW09001	LORNG_OW09001_09302022	FA99403-23	9/30/2022	WG							
	OW17002	LORNG_OW17002_10022022	FA99403-65	10/2/2022	WG							
	OW20001	LORNG_OW20001_09302022	FA99403-10	9/30/2022	WG							
	OW20002	LORNG_OW20002_09302022	FA99403-24	9/30/2022	WG							

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					Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
					F	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA99403	OW20003	LORNG_OW20003_10012022	FA99403-33	10/1/2022	WG						
	OW20004	LORNG_OW20004_10022022	FA99403-56	10/2/2022	WG						
	OW20005	LORNG_OW20005_10022022	FA99403-66	10/2/2022	WG						
	OW20006	LORNG_OW20006_10012022	FA99403-43	10/1/2022	WG						
	OW20007	LORNG_OW20007_09302022	FA99403-11	9/30/2022	WG						
	OW23001	LORNG_OW23001_10022022	FA99403-67	10/2/2022	WG						
	WBGB_BW001	LORNG_WBGB_BW001_10012022	FA99403-34	10/1/2022	WG						
		LORNG_WBGB_BW001_10012022FD	FA99403-35	10/1/2022	WG						
	WWTP_WSW	LORNG_WWTP_WSW_09302022	FA99403-12	9/30/2022	WP						
FA99474	BW06007	LORNG_BW06007_10032022	FA99474-1	10/3/2022	WG						
	BW17005	LORNG_BW17005_10032022	FA99474-2	10/3/2022	WG						
	BW18004	LORNG_BW18004_10032022	FA99474-3	10/3/2022	WG						
	BW22001	LORNG_BW22001_10032022	FA99474-4	10/3/2022	WG						
	FIELDQC	LORNG_EB070_10032022	FA99474-5	10/3/2022	WQ						
		LORNG_EB071_10032022	FA99474-6	10/3/2022	WQ						
	OW07001	LORNG_OW07001_10042022	FA99474-7	10/4/2022	WG						
	OW10007	LORNG_OW10007_10032022	FA99474-8	10/3/2022	WG						
	OW12002	LORNG_OW12002_10032022	FA99474-9	10/3/2022	WG						
	OW22003	LORNG_OW22003_10032022	FA99474-10	10/3/2022	WG						
FC165	BW05011D	LORNG_BW05011D_10262022	FC165-1	10/26/2022	WG						
	BW05011S	LORNG_BW05011S_10262022	FC165-2	10/26/2022	WG						
	BW06006	LORNG_BW06006_10252022	FC165-3	10/25/2022	WG						
	BW17006	LORNG_BW17006_10262022	FC165-4	10/26/2022	WG						
	FIELDQC	LORNG_EB072_10262022	FC165-5	10/26/2022	WQ						
		LORNG_EB073_10262022	FC165-6	10/26/2022	WQ						
		LORNG_EB074_10252022	FC165-7	10/25/2022	WQ						
		LORNG_EB075_10262022	FC165-8	10/26/2022	WQ						
		LORNG_EB076_10272022	FC165-13	10/27/2022	WQ						
		LORNG_EB077_10272022	FC165-14	10/27/2022	WQ						
	GC_BW002D	LORNG_GC_BW002D_10252022	FC165-9	10/25/2022	WG						
	GC_BW002S	LORNG_GC_BW002S_10252022	FC165-10	10/25/2022	WG						
	NP_BW001D	LORNG_NP-BW001D_10272022	FC165-15	10/27/2022	WG						
	NP_BW001S	LORNG_NP-BW001S_10272022	FC165-16	10/27/2022	WG						
	NP_OW001	LORNG_NP-OW001_10272022	FC165-17	10/27/2022	WG	10	21	16	6	1	
	OW17003	LORNG_OW17003_10272022	FC165-11	10/27/2022	WG						
	OW24001	LORNG_OW24001_10262022	FC165-12	10/26/2022	WG			16	6	1	

Prepared by:AKN
Date:12/9/22
Checked by: CLC
Date: 12/14/2022

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Metho	PCBs	Pesticides	Metals	Metals		Perchlorate
						Analysis	SW8082A	SW8081B	SW6010C	SW6020A	SW7470A	SW6850
						F	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP5064	BW05007	LORNG_BW05007_09072022_K	SP5064-1	9/7/2022	WG							
	FIELDQC	LORNG_TB12_08312022	SP5064-7	9/1/2022	WQ				16	6	1	
	JBW7711	LORNG_JBW7711_09012022_K	SP5064-2	9/1/2022	WG							
		LORNG_JBW7711_09012022FD_K	SP5064-3	9/1/2022	WG				16	6	1	
	JMW0445	LORNG_JMW0445_08312022_K	SP5064-4	8/31/2022	WG				16	6	1	
SP5064	SB/OW12001	LORNG_OW12001_09012022_K	SP5064-5	9/1/2022	WG							
	SB/OW17001	LORNG_OW17001_08312022_K	SP5064-6	8/31/2022	WG		10		16	6	1	
SP5209	BW06005	LORNG_BW06005_09142022_K	SP5209-1	9/14/2022	WG							
	FIELDQC	LORNG_TB13_09152022	SP5209-6	9/15/2022	WQ							
	JPZ0349	LORNG_JPZ0349_09142022_K	SP5209-2	9/14/2022	WG		10		16	6	1	
	MMW0124	LORNG_MMW0124_09132022_K	SP5209-3	9/13/2022	WG							
		LORNG_MMW0124_09132022FD_K	SP5209-4	9/13/2022	WG		10		16	6	1	
	OW21005	LORNG_OW21005_09142022_K	SP5209-5	9/14/2022	WG		10		16	6	1	
SP5253	JMW8011	LORNG_JMW8011_09172022_K	SP5253-1	9/17/2022	WG		10		16	6	1	
	OW16001	LORNG_OW16001_09182022_K	SP5253-3	9/18/2022	WG							
	OW24001	LORNG_OW24001_09182022_K	SP5253-2	9/18/2022	WG		10		16	6	1	
SP5278	AA07MW-01	LORNG_AA07MW01_09202022_K	SP5278-2	9/20/2022	WG							
	FIELDQC	LORNG_TB14_09202022	SP5278-1	9/20/2022	WQ				16	6	1	
	JMW0683	LORNG_JMW0683_09192022_K	SP5278-3	9/19/2022	WG				16	6	1	
SP5537	FIELDQC	LORNG_TB15_09302022	SP5537-6	9/30/2022	WQ							
	JBW7338B	LORNG_JBW7338B_09272022_K	SP5537-5	9/27/2022	WG							
	JBW7348	LORNG_JBW7348_09282022_K	SP5537-1	9/28/2022	WG							
SP5537	JBW7348	LORNG_JBW7348_09282022FD_K	SP5537-2	9/28/2022	WG				1			
	JBW7737B	LORNG_JBW7737B_09282022_K	SP5537-3	9/28/2022	WG				1			
		LORNG_JBW7737B_09282022FD_K	SP5537-4	9/28/2022	WG				1			
SP5577	BW01006	LORNG_BW01006_09302022_K	SP5577-1	9/30/2022	WG				1			
		LORNG_BW01006_09302022FD_K	SP5577-2	9/30/2022	WG							
	BW01008	LORNG_BW01008_09302022_K	SP5577-3	9/30/2022	WG							
	BW01009	LORNG_BW01009_09302022_K	SP5577-4	9/30/2022	WG				16	6	1	
	BW12006	LORNG_BW12006_10012022_K	SP5577-5	10/1/2022	WG				16	6	1	
	FIELDQC	LORNG_TB16_10032022	SP5577-9	10/3/2022	WQ				16	6	1	
	JBW7339B	LORNG_JBW7339B_10012022_K	SP5577-6	10/1/2022	WG				16	6	1	
	OW07003	LORNG_OW07003_10022022_K	SP5577-7	10/2/2022	WG							1
	OW08002	LORNG_OW08002_09302022_K	SP5577-8	9/30/2022	WG							1
SP6227	OW24001	LORNG_OW24001_10262022_K	SP6227-1	10/26/2022	WG							1
200-64869	BW05007	LORNG_BW05007_09072022_E	200-64869-1	9/7/2022	WG							1
	SB/OW12001	LORNG_OW12001_09012022_E	200-64869-2	9/1/2022	WG							1
200-64993	BW06005	LORNG_BW06005_09142022_E	200-64993-1	9/14/2022	WG							1
	MMW0124	LORNG_MMW0124_09132022_E	200-64993-2	9/13/2022	WG							1
		LORNG_MMW0124_09132022FD_E	200-64993-3FD	9/13/2022	WG							1
	OW21005	LORNG_OW21005_09142022_E	200-64993-4	9/14/2022	WG							1
200-64994	JMW8011	LORNG_JMW8011_09172022_E	200-64994-1	9/17/2022	WG							1
	OW16001	LORNG_OW16001_09182022_E	200-64994-2	9/18/2022	WG							1
200-65216	JBW7338B	LORNG_JBW7338B_09272022_E	200-65216-2	9/27/2022	WG							1
	JBW7737B	LORNG_JBW7737B_09282022_E	200-65216-1	9/28/2022	WG							
200-65217	BW12006	LORNG_BW12006_10012022_E	200-65217-1	10/1/2022	WG							
	JBW7339B	LORNG_JBW7339B_10012022_E	200-65217-2	10/1/2022	WG							
Notes:												
N = Total												
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank												
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Wate												
ParamCount = Number of target analtytes reported												

Prepared by:AKN
Date:12/9/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98397											
		Location	FIELDQC				JMW0880		JMW0980		JMW0982		JMW0991	
		Sample Date	8/23/2022			8/24/2022	8/23/2022		8/23/2022		8/23/2022		8/23/2022	
		Sample ID	LORNG_EB032_08232022		LORNG_EB033_08232022		LORNG_EB034_08242022		LORNG_JMW0880_08232022		LORNG_JMW0980_08232022		LORNG_JMW0982_08232022		LORNG_JMW0991_08232022	
		QC Code	EB		EB		EB		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	4	U	3.7	U	4.4	U	4	U	3.7	U	4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7	U	4	U	3.7	U	4.4	U	4	U	1.9	J	4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	4	U	3.7	U	4.4	U	4	U	3.7	U	4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	4	U	1.9	J	4.4	U	8.6		3.7	U	4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	U	4	U	3.7	U	22	R	20	R	3.7	UJ	20	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	4	U	3.7	U	4.4	U	4	U	2.5	J	4	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	2	U	1.9	U	1.2	J	2	J	1.9	U	2	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	4	U	3.7	U	5.9	J	2.1	J	3.7	U	4	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	2	U	1.9	U	2.2	UJ	2	U	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	1.9	U	2.2	U	2	U	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	9.3	U	10	U	9.3	U	11	UJ	10	U	9.3	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2	U	1.9	U	2.2	U	2	U	1.9	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	2	U	1.9	U	2.7	J	1.9	J	1.1	J	1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	2	U	1.9	U	12.6		5.7		7.8		7.2	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	2	U	1.9	U	7		5.1		2.5	J	3.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U	1.9	U	2.2	U	2	U	1.9	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2	U	1.9	U	1.3	J	2	U	1.9	U	2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U	1.9	U	2.2	U	10	U	1.7	J	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	2	U	1.1	J	23.8		34		26.9		19.4	
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	U	2	U	1.9	U	8.3		10.6		5.2		7.4	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	2	U	1.9	U	2.2	U	1.3	J	1.9	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	2	U	1.9	U	6		2.5	J	3	J	3.7	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	10	U	9.3	U	11	UJ	10	UJ	9.3	UJ	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	9.3	U	10	U	9.3	U	11	UJ	10	U	9.3	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	9.3	U	10	U	9.3	U	11	U	2	U	1.9	U	2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and reporting limit considered estimated
R = Sample result is considered unusable for preoject objectives
NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98397			FA98576				
		Location	LF2MW2	MMW0002	OW07003	JMW-0416B	JMW-0806	JMW0961	JMW0992	JPZ7808
		Sample Date	8/22/2022	8/22/2022	8/23/2022	8/30/2022	8/30/2022	8/29/2022	8/30/2022	8/30/2022
		Sample ID	LORNG_LF2MW2_08222022	LORNG_MMW0002_08222022	LORNG_OW07003_08232022	LORNG_JMW0416B_08302022	LORNG_JMW0806_08302022	LORNG_JMW0961_08292022	LORNG_JMW0992_08302022	LORNG_JPZ7808_08302022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.8 U	11.2	3.7 U	4 U	4.5 U	4 U	3.7 UJ
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.2 J	476	3.7 U	4 U	4.5 U	4 U	3.7 UJ
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.8 U	104	3.7 U	4 U	4.5 U	4 U	3.7 UJ
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.8 U	19 U	3.7 UJ	4 UJ	23 UJ	4 UJ	3.7 UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 R	19 R	19 UJ	19 UJ	4 U	23 UJ	4 UJ	19 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.8 U	3.7 U	19 U	4 U	23 UJ	4 U	3.7 UJ
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	9.6 U	85.7	1.9 U	2 U	2.3 U	2 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U	3.8 U	93.9	4.5 J	5.3 J	4.5 U	4 U	3.7 UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 UJ	1.9 U	1.9 U	2 U	11 U	2 U	1.9 UJ
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.3 J	1.9 U	2 U	2.3 U	2 U	1.9 UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	9.3 U	9.6 U	9.3 U	1.9 U	2 U	11 U	2 U	1.9 UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	93.9 J	1.9 U	2 U	2.3 U	2 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	150	1.9 U	1.2 J	1.4 J	2 U	1.9 UJ
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.9	1.9 U	1090	6.9	9.3	3.7 J	1.6 J	10
		Perfluorohexanoic acid (PFHxA)	NG/L	1 J	1.9 U	289	2.5 J	3.5 J	2.5 J	2 U	1.9 UJ
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 UJ	1.9 U	2 U	2.3 U	2 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	29.2	1.9 U	2 U	2.3 U	2 U	1.9 UJ
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	4.6	9.3 U	2 U	11 U	2 U	1.9 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6	1.9 U	3410	3.2 J	7.4	16.4	1.4 J	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	3.3 J	1.9 U	283	1.3 J	2.6 J	6.2	1.4 J	1.9 UJ
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	1.9 UJ	118	1.9 U	2 U	2.3 U	2 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.9 U	375	6.7	2.3 J	1.1 J	2 U	1.9 UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	9.3 U	9.6 U	1.9 U	1.9 U	2 U	11 U	2 U	1.9 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	9.3 U	9.6 U	9.3 U	1.9 U	2 U	11 U	2 U	1.9 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	9.6 U	1.9 U	1.9 U	2 U	11 U	2 U	1.9 UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98576							
			Location	LF3MW3	LF3MW4	MMW0009	MMW0018B	MMW0422	MMW0423	OW22001	RFW-38
			Sample Date	8/29/2022	8/29/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	8/29/2022	8/30/2022
			Sample ID	LORNG_LF3MW3_08292022	LORNG_LF3MW4_08292022	LORNG_MMW0009_08302022	LORNG_MMW0018B_08302022	LORNG_MMW0422_08302022	LORNG_MMW0423_08302022	LORNG_OW22001_08292022	LORNG_RFW-38_08302022
			QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	4 U	3.9 U	4 U	4 U	3.7 U	4.5 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	2.2 J	4 U	3.9 U	4 U	4 U	5.8 J	4.5 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	4 U	3.9 U	4 U	4 U	3.7 U	4.5 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	3.9 UJ	4 UJ	4 UJ	3.7 UJ	4.5 UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 UJ	4 R	4 UJ	20 R	4 UJ	4 UJ	3.7 UJ	23 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	20 UJ	4 U	4 UJ	3.7 U	4.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 U	2 U	2 U	1.1 J	1.4 J	1.9 U	2.3 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	2.3 J	4 U	3.9 U	2 J	2 J	3.7 U	4.5 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 UJ	1.9 U	2.3 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	2 U	2 U	2 UJ	2 UJ	1.9 U	2.3 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	2.3 J	2 U	2 U	1.4 J	1.5 J	1.9 U	2.3 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	7.9	15	2 U	14.4	14.9	12.1	2.3 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	5	2 U	2 U	2 J	2.2 J	1.4 J	2.3 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	2 U	9.8 UJ	2 U	2 U	1.9 U	2.3 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 U	19.2	3.1 J	3.2 J	7.9	8.3	34.9	2.3 U
		Perfluorooctanoic acid (PFOA)	NG/L	2 U	8.1	2.3 J	2 U	3 J	3.2 J	2.3 J	2.3 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2 U	2 U	2 U	1.3 J	1.2 J	1.9 U	2.3 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 U	4.8	1.1 J	2 U	2.1 J	2.2 J	1.9 U	2.3 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 UJ	2 U	2 U	2 U	2 UJ	2 U	1.9 U	2.3 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 UJ	2 U	2 U	2 U	2 UJ	2 UJ	1.9 U	2.3 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 UJ	1.9 U	2.3 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98616									
		Location	BW14005	FIELDQC						JMW0241A	JMW0882	
		Sample Date	8/31/2022	8/30/2022				8/31/2022		8/30/2022	8/30/2022	
		Sample ID	LORNG_BW14005_08312022	LORNG_EB035_08302022		LORNG_EB036_08302022		LORNG_EB037_08302022		LORNG_EB038_08302022	LORNG_EB039_08312022	LORNG_JMW0241A_08302022	LORNG_JMW0882_08302022	
		QC Code	N	EB		EB		EB		EB	EB	N	N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	4	U	4	U	3.7	U	5	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	11		3.7	U	3.7	U	3.7	U	4	U	4	U	2.2	J	5	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	4	U	4	U	3.7	U	5	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	4	U	4	U	3.7	U	6.8	J
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	R	3.7	U	3.7	U	3.7	U	20	U	20	U	19	R	25	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	4	U	4	U	3.7	U	5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluorobutanoic acid (PFBA)	NG/L	6	J	3.7	U	3.7	U	3.7	U	4	U	4	U	3.7	U	25	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	9.3	U	1.9	U	1.9	U	10	U	2	U	1.9	U	2.5	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.5	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3	J	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	3.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.3	J	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	14.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	2.6	J	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	4.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	9.3	UJ	13	UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.5	J	1.9	U	1.9	U	1.9	U	2	U	2	U	1.2	J	51.8	
		Perfluorooctanoic acid (PFOA)	NG/L	2.8	J	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	14.5	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	2.5	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.95	J	1.9	U	1.9	U	1.9	U	2	U	2	U	9.3	U	2.7	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	2	U	10	U	1.9	U	2.5	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	9.3	U	1.9	U	1.9	U	10	U	2	U	1.9	U	2.5	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	10	U	2	U	1.9	U	2.5	U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98616				FA98677			
		Location	JMW0941	JPZ7704	MMW0015	OW10007	BW05006	BW06007	BW10006	
		Sample Date	8/30/2022	8/30/2022	8/30/2022	8/31/2022	9/1/2022	9/1/2022	9/1/2022	
		Sample ID	LORNG_JMW0941_08302022	LORNG_JPZ7704_08302022	LORNG_MMW0015_08302022	LORNG_OW10007_08312022	LORNG_BW05006_09012022	LORNG_BW06007_09012022	LORNG_BW10006_09012022	LORNG_BW10006_09012022FD
		QC Code	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	4 U	4 U	4 U	3.7 U	4 U	4.3 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.7 U	4 U	4 U	4 U	201 J	4 U	4.3 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	4 U	4 U	4 U	72.1	4 U	4.3 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	4 U	4 U	4 U	3.7 U	4 U	4.3 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 UJ	3.7 UJ	4 U	4 UJ	20 UJ	3.7 U	20 UJ	21 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	4 U	4 U	4 U	3.7 U	4 U	4.3 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	2.3 J	2 U	1.9 J	2 U	17.1	2.5 J	2.1 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U	6.3 J	4 U	5.5 J	4 U	102	3.9 J	3.2 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.2 J	2 U	2.1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	6.8	1.2 J	2.1 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	4.4	2 U	3.9 J	2 U	171	3.2 J	2.8 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	29.9	2 U	16.7	2.6 J	139	40.7	33.2
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	10.1	2 U	7.5	2 U	161	7.7	6.8
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	15.7	2 U	2.1 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	29	2 U	12.7	2.6 J	222	38.4	31.8
		Perfluorooctanoic acid (PFOA)	NG/L	1.9 U	7.9	2 U	5.4	1.5 J	85.3	9	7.4
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	3 J	2 U	1.4 J	2 U	17.6	3.1 J	2.1 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	12.9	2 U	10.8	2 U	341	6	5.3
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	2 U	2 U	2 U	1.9 U	2 U	2.1 U

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Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

		SDG	FA98677									
		Location	BW17004	BW17005	BW18004	BW22001	CBW02	FIELDQC				
		Sample Date	8/31/2022	9/1/2022	9/1/2022	9/1/2022	8/31/2022	8/31/2022			9/1/2022	
		Sample ID	LORNG_BW17004_08312022	LORNG_BW17005_09012022	LORNG_BW18004_09012022	LORNG_BW22001_09012022	LORNG_CBW02_08312022	LORNG_EB040_08312022		LORNG_EB041_08312022		LORNG_EB042_09012022	
		QC Code	N	N	N	N	N	EB		EB		EB	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	4	U	7.6	U	3.7	U	4	U	3.7	U	3.6	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U	4	U	127		3.7	U	2.8	J	3.7	U	3.6	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	4	U	7.6	U	3.7	U	4	U	3.7	U	3.6	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	4	U	7.6	U	3.7	U	4	U	3.7	U	18	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	UJ	20	UJ	38	R	19	R	20	UJ	19	U	18	U	19	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	4	U	7.6	U	3.7	U	4	U	3.7	U	18	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.94	J	2.4	J	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluorobutanoic acid (PFBA)	NG/L	2	J	10.4		7.6	U	19	U	12.9	J	3.7	U	3.6	U	3.7	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	9.3	U	8.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	9.3	U	8.9	U	9.3	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.3	J	16.8		3.8	U	1.9	U	2	J	1.9	U	1.8	U	1.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13.6		27.9		3.8	U	1.4	J	15.4		1.9	U	1.8	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	3.4	J	17.7		5.9	J	1.9	U	4.8		1.9	U	1.8	U	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.1	J	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	2	U	19	UJ	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	8.3		23.6		3.8	U	1.9	U	12.8		1.9	U	1.8	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	3.9		9.7		3.8	U	1.9	U	3.1	J	1.9	U	1.8	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	2.1	J	3.8	U	1.9	U	2	U	1.9	U	1.8	U	1.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.5	J	27.7		3.8	U	1.3	J	5.8		1.9	U	1.8	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	2	U	3.8	U	9.3	U	2	U	1.9	U	8.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	9.3	U	8.9	U	9.3	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	2	U	3.8	U	1.9	U	2	U	9.3	U	8.9	U	1.9	U

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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA98677									
		Location			FMW3410	FMW3413	JBW7403	JBW7711	JBW7714	JBW7912			
		Sample Date		9/1/2022	9/1/2022	9/1/2022	8/31/2022	9/1/2022	8/31/2022	9/1/2022			
		Sample ID		LORNG_EB043_09012022	LORNG_FMW3410_09012022	LORNG_FMW3413_09012022	LORNG_JBW7403_08312022	LORNG_JBW7711_09012022	LORNG_JBW7714_08312022	LORNG_JBW7912_40_09012022		LORNG_JBW7912_150_09012022	
		QC Code		EB	N	N	N	N	N	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.8	U	3.7	U	4	U	3.7	U	3.7	U	3.2	J	4.1	J	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8	U	3.7	U	4	U	3.7	U	3.7	U	2	J	3.7	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.8	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.8	U	3.7	UJ	20	U	3.7	UJ	3.7	UJ	3.7	U	3.7	UJ	3.7	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	3.9		2.3	J	1.9	U	2.5	J	1.9	U	3.1	J	3	J
		Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	19.1		8.8		3.7	U	3.1	J	4.7	J	13.3		12	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2.5	J	2	U	1.9	U	2.2	J	1.9	U	1.4	J	1.5	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	27.1		10.9		1.9	U	2.5	J	5.7		17.6		14.7	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	57.7		21.8		1.9	U	78.8		9.4		38.3		36.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	31.2		12.1		1.9	U	7.3		4		20.1		15.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2.3	J	1.9	J	1.9	U	1.9	U	1.9	U	1.8	J	1.4	J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.3	J	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	71.9		26.8		1.9	U	117		8.6		50		61.1	
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	U	18.5		7.9		1.9	U	10		5.6		12.8		10.7	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	4.6		2.2	J	1.9	U	3.2	J	1.9	U	3	J	3.3	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	51.9		19.1		1.9	U	3.3	J	7.2		33.7		25.5	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

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NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98677									
		Location	JMW0445	JMW7916	OW10005		OW12002	OW14004		OW22003		
		Sample Date	8/31/2022	9/1/2022	8/31/2022		9/1/2022	8/31/2022		9/1/2022		
		Sample ID	LORNG_JMW0445_08312022	LORNG_JMW7916_09012022	LORNG_OW10005_08312022	LORNG_OW10005_08312022FD	LORNG_OW12002_09012022	LORNG_OW14004_08312022	LORNG_OW14004_08312022FD	LORNG_OW22003_09012022		
		QC Code	N	N	N	FD	N	N	FD	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	4 U	3.7 U	4 U	4 U	3.7 U	3.7 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	5 J	3.7 U	4 U	3.7 U	13.6	4 U	3.7 U	3.7 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	4 U	3.7 U	4 U	4 U	3.7 U	3.7 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	4 U	3.7 U	4 U	4 U	3.7 U	3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 R	19 R	20 U	19 UJ	4 UJ	4 UJ	19 U	19 R	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	4 U	3.7 U	4 U	4 U	3.7 U	3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.6 J	1.5 J	2 U	2 J	5.7	5	5.6	2.5 J	
		Perfluorobutanoic acid (PFBA)	NG/L	14.8	10.4	7.1 J	7.5	9	12.2	12.6 J	4.7 J	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	2 U	1.9 U	6.1	2 U	1.9 U	1.9 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.5 J	2.4 J	8.7	8.2	11.5	16.3	16.6	3.2 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	30.9	24.1	23.4	21.8	98.1	87.2	89.3	30.8	
		Perfluorohexanoic acid (PFHxA)	NG/L	5.7	2.9 J	7.5	7.5	17.2	25	23.1	6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	1 J	1.9 U	2 U	1.9 U	1.4 J	2 U	1.9 U	1.8 J	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	9.3 U	2 U	9.3 U	2 U	2 U	1.9 U	1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	23.9	12.6	31.3	32.3	299	4.1	4.6	54.9	
		Perfluorooctanoic acid (PFOA)	NG/L	6.7	3.9	7.7	7.2	14.4	41.4	43.3	7.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.3 J	1.9 U	3.8 J	4.2	7.9	7.8	6.2	1.9 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	7.4	5.1	13.5	12.5	21	31.4	28.6	7.4	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	9.3 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98677		FA98818					
		Location	SB/OW12001	SB/OW17001	043-MW03	BW05007	FIELDQC	JBW7314	MMW0007A	MMW0007B
		Sample Date	9/1/2022	8/31/2022	9/6/2022	9/7/2022	9/8/2022	9/7/2022	9/8/2022	9/8/2022
		Sample ID	LORNG_OW12001_09012022	LORNG_OW17001_08312022	LORNG_043-MW03_09062022	LORNG_BW05007_09072022	LORNG_EB044_09082022	LORNG_JBW7314_09072022	LORNG_MMW0007A_09082022	LORNG_MMW0007B_09082022
		QC Code	N	N	N	N	EB	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	3.7 U	78.5	3.7 U	3.7 U	5.4 J	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	3.7 U	14.4	19 U	3.7 UJ	3.8 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	19 U	3.7 UJ	3.8 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 R	4 U	3.7 UJ	19 UJ	19 U	3.7 UJ	3.8 R	19 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	19 U	3.7 UJ	3.8 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	19.8	1.9 J	1.6 J	28.5	1.9 U	1.9 U	1.9 U	2.1 J
		Perfluorobutanoic acid (PFBA)	NG/L	20.3	9 J	3.1 J	56.5	3.7 U	3.7 U	3.8 U	4.7 J
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 UJ	1.9 U	1.9 UJ
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 UJ	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	19.4	2 U	1.1 J	18.7	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	26.5	5.6	1.8 J	98.1	1.9 U	1.9 U	1.4 J	6.6
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	336	15.1	19.5	326	1.9 U	1.4 J	4.1	26.8
		Perfluorohexanoic acid (PFHxA)	NG/L	38.3	14.4	2.2 J	122	1.9 U	1.9 U	2.9 J	10.8
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	6.3	2 U	1.9 U	13.2	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	10 U	2 U	1.9 U	1.7 J	9.3 U	1.9 UJ	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	908	7.9	67.7	1120	9.3 U	3.5 J	5.5	25.9
		Perfluorooctanoic acid (PFOA)	NG/L	39.2	4.3	3.3 J	75.6	1.9 U	0.95 J	1.6 J	7.5
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	31	2 J	2.1 J	38.5	1.9 U	1.9 U	1.9 U	2.4 J
		Perfluoropentanoic acid (PFPeA)	NG/L	36.6	29.2	4.6	184	1.9 U	1.1 J	3.9	10.9
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	1.9 U	9.3 U	1.9 U	1.9 UJ	1.9 U	9.3 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 UJ	1.9 U	1.9 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	1.9 U	1.9 U	9.3 U	1.9 UJ	1.9 U	1.9 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98818		FA98981											
			Location	MMW0132		BW06005		BW06006		FIELDQC		JBW7203A		JBW7203B		JBW7326A	
			Sample Date	9/8/2022		9/14/2022		9/14/2022		9/14/2022		9/13/2022		9/13/2022		9/13/2022	
			Sample ID	LORNG_MMW0132_09082022		LORNG_BW06005_09142022		LORNG_BW06006_09142022		LORNG_EB045_09142022	LORNG_EB046_09142022	LORNG_JBW7203A_09132022		LORNG_JBW7203B_09132022		LORNG_JBW7326A_09132022	
			QC Code	N		N		N		EB	EB	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4	J	38.2		53.9		3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8	U	60.6		17.6		3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	UJ	3.7	UJ	19	UJ	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	7		42		1.9	U	1.9	U	1.9	J	2.3	J	2	J
		Perfluorobutanoic acid (PFBA)	NG/L	3.7	J	31.7		84.4		3.7	U	3.7	U	6.4	J	5.9	J	5.7	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	4.6		21.8		1.9	U	1.9	U	1	J	1.9	U	1	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	56.6		138		1.9	U	1.9	U	6.3		5.5		4.9	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	84.8		396		1.9	U	1.9	U	22.7		27.3		30.4	
		Perfluorohexanoic acid (PFHxA)	NG/L	3.5	J	49.7		158		1.9	U	1.9	U	9.9		8.1		8.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.6	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	6.9		20.3		1.9	U	1.9	U	0.95	J	1.9	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	4		7.8		1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.4	J	232		1010		1.9	U	1.9	U	37.2		32.4		29.9	
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	U	38.1		112		1.9	U	1.9	U	8		6.7		6.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	9.7		50.5		1.9	U	1.9	U	2.6	J	3.1	J	2.9	J
		Perfluoropentanoic acid (PFPeA)	NG/L	7.6		91.6		225		1.9	U	1.9	U	14		10.9		10.5	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

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Former Loring Air Force Base, Limestone, Maine

		SDG	FA98981							
		Location	JBW7326B	JMW1960	JMW1981	JMW1982	JMW7322	JPZ0348	JPZ0349	MMW0010
		Sample Date	9/13/2022	9/14/2022	9/13/2022	9/14/2022	9/13/2022	9/14/2022	9/14/2022	9/13/2022
		Sample ID	LORNG_JBW7326B_09132022	LORNG_JMW1960_09142022	LORNG_JMW1981_09132022	LORNG_JMW1982_09142022	LORNG_JMW7322_09132022	LORNG_JPZ0348_09142022	LORNG_JPZ0349_09142022	LORNG_MMW0010_09132022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	5.3 J	3.7 U	22.2	3.7 U	3.7 U	3.7 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	8.9	3.7 U	7.5	3.7 U	3.7 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 U	19 R	3.7 U	19 UJ	3.7 U	3.7 U	3.7 UJ	3.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 J	4.3	2.1 J	17.3	3.2 J	5.7	1.3 J	2.9 J
		Perfluorobutanoic acid (PFBA)	NG/L	5.1 J	7.4	5.8 J	20.8	8.4	11.6	4.2 J	6.7 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	3.6 J	0.95 J	19.4	1.9 U	3.6 J	1.9 U	1.5 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.2	12.8	4.9	46.6	5.5	17.8	3.4 J	9
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	29.4	84	26	577	50	229	26.4	47.3
		Perfluorohexanoic acid (PFHxA)	NG/L	6.4	21.1	7.9	142	11.4	43.4	6	14.6
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	1.8 J	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.7 J	1.9 U	5.3	1.9 U	1.4 J	1.9 U	1.1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	11.1	1.9 U	24.9	1.9 U	3.8	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	28.1	280	29	1020	27.4	125	16.6	70.5
		Perfluorooctanoic acid (PFOA)	NG/L	6	29.2	5.5	166	8.2	46.6	6.3	12
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.7 J	5.3	2.9 J	22.7	3.9	7.9	1.7 J	3.7
		Perfluoropentanoic acid (PFPeA)	NG/L	8.3	19.3	10.8	64.1	16.2	31.8	6.8	15.3
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U

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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98981								FA99047	
		Location	MMW0010	MMW0011	MMW0017		MMW0124	OW21005			BSMW3S	
		Sample Date	9/13/2022	9/13/2022	9/13/2022		9/14/2022	9/14/2022	9/13/2022		9/18/2022	
		Sample ID	LORNG_MMW0010_09132022FD	LORNG_MMW0011_09132022	LORNG_MMW0017_09132022	LORNG_MMW0017_09132022FD	LORNG_MMW0124_09142022	LORNG_OW21005_09142022	LORNG_OW21005_09142022FD		LORNG_BSMW3S_09182022	
		QC Code	FD	N	N	FD	N	N	FD		N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.4 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.2 J	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.4 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.4 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 U	3.7 UJ	3.7 UJ	3.7 U	3.7 R	19 R	19 R	4.4 UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.4 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3 J	3.1 J	3.7	3.7	1.3 J	7.3	7.4	14.4	
		Perfluorobutanoic acid (PFBA)	NG/L	7 J	7.1 J	7.3 J	7.5	3.7 J	14.5	14.8	35.3	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7 J	1.6 J	2.1 J	2.1 J	1.9 U	3.9	3.9	6.4	
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.1	10	11.1	11.2	3.2 J	20.9	21.3	46.9	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	49.2	46.9	63.2	64.6	13.1	158	160	368	
		Perfluorohexanoic acid (PFHxA)	NG/L	14	15.6	19.3	19.7	4.3	43.3	43.7	71.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluorononanoic acid (PFNA)	NG/L	1.1 J	1.2 J	1.2 J	1.2 J	1.9 U	2.1 J	2.4 J	12.5	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	1.2 J	1.3 J	1.9 U	3.5 J	3.7	36.9	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	67.5	74.8	96.3	96.8	15.8	118	124	404 J	
		Perfluorooctanoic acid (PFOA)	NG/L	12.6	12.8	17.3	17.4	6.3	38.2	38.9	102	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.9	4.4	4.7	4.7	1.7 J	10.3	10.3	25.3	
		Perfluoropentanoic acid (PFPeA)	NG/L	15.3	17.1	17	17.8	5.7	43.2	45	58.9	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.2 U	

Notes:
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NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

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Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99047								FA99047	
		Location	BSMW3S	BW01005	BW17006	FIELDQC			JBW7215B	JBW7304B		
		Sample Date	9/18/2022	9/18/2022	9/18/2022	9/18/2022			9/18/2022	9/18/2022		
		Sample ID	LORNG_BSMW3S_09182022FD	LORNG_BW01005_09182022	LORNG_BW17006_09182022	LORNG_EB047_09182022	LORNG_EB048_09182022	LORNG_EB049_09182022	LORNG_JBW7215B_09182022	LORNG_JBW7304B_09182022		
		QC Code	FD	N	N	EB	EB	EB	N	N		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 J	71.4	33.2	10.1	3.7 U	3.7 U	3.7 U	4.8 J	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	2.1 J	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 UJ	3.7 UJ	19 UJ	3.7 U	3.7 U	19 U	3.7 R	3.7 UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	14.2	6.2	1.9 U	1.9 U	1.9 U	1.9 U	1.6 J	2.1 J	
		Perfluorobutanoic acid (PFBA)	NG/L	34.6	15	4.3 J	3.7 U	3.7 U	3.7 U	6.9 J	8.5	
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.1 J	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	7.8	7.9	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.7 J	
		Perfluoroheptanoic acid (PFHpA)	NG/L	48.7	17.9	2.8 J	1.9 U	1.9 U	1.9 U	6.9	7.2	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	384	170	3.6 J	1.9 U	1.9 U	1.9 U	23.2	27.7	
		Perfluorohexanoic acid (PFHxA)	NG/L	72.8	35.7	7.6	1.9 U	1.9 U	1.9 U	8.3	10.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	1.2 J	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	14.4	3.2 J	1.9 U	1.9 U	1.9 U	1.9 U	1.1 J	1.9 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	41.7	9.3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	585 J	323	2.2 J	1.9 U	1.9 U	1.9 U	31.2	108	
		Perfluorooctanoic acid (PFOA)	NG/L	105	45.5	1.7 J	1.9 U	1.9 U	1.9 U	5.7	5.9	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	24.7	10.2	1.9 U	1.9 U	1.9 U	1.9 U	2.1 J	3 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	61.8	35.1	7.8	1.9 U	1.9 U	1.9 U	11.6	19.1	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	

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Former Loring Air Force Base, Limestone, Maine

		SDG	FA99047							FA99047
		Location	JBW8003B	JBW8004B	JMW-0602	JMW1762	JMW3102	JMW3501	JMW3601	JMW8011
		Sample Date	9/17/2022	9/17/2022	9/18/2022	9/18/2022	9/18/2022	9/18/2022	9/18/2022	9/17/2022
		Sample ID	LORNG_JMW8003B_09172022	LORNG_JMW8004B_09172022	LORNG_JMW0602_09182022	LORNG_JMW1762_09182022	LORNG_JMW3102_09182022	LORNG_JMW3501_09182022	LORNG_JMW3601_09182022	LORNG_JMW8011_09172022
		QC Code	N	N	N	N	N	N	N	N

Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	4	U	3.6	U	3.7	U	3.6	U	3.7	U	3.7	U	2.4	J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	26.2		119		3.6	U	3.7	U	3.6	U	3.7	U	3.7	U	141	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	22.5		49.3		3.6	U	3.7	U	3.6	U	3.7	U	3.7	U	53.9	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	4	U	3.6	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	37	U	4	U	18	UJ	3.7	U	18	U	19	R	3.7	UJ	37	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	4	U	3.6	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	20		31.3		1.8	U	1.1	J	1.3	J	1.9	U	1.9	U	36.6	
		Perfluorobutanoic acid (PFBA)	NG/L	27.4		45.9		2.1	J	3.1	J	19.4		3.3	J	2.1	J	51.4	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	2	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.5	J	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	2	J
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	15.4		33.4		1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	39.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	57.5		96		1	J	2.9	J	1.7	J	1.7	J	1.2	J	106	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	779		1210		11.9		14.1		1.8	U	2.7	J	8.8		1410	
		Perfluorohexanoic acid (PFHxA)	NG/L	169		276		2	J	4.2		32.2		2.3	J	1.4	J	325	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	4.1		1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	5.9	
		Perfluorononanoic acid (PFNA)	NG/L	12.5		17.2		1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	21	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	15		31.1		1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	39.4	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1240		1710		18.2		15.8		1.8	U	1.4	J	10.7		2150	
		Perfluorooctanoic acid (PFOA)	NG/L	175		271		3.7		5.3		2.2	J	2	J	6.2		322	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	25.4		47.8		1.8	U	1.5	J	1.8	U	1.9	U	1.3	J	56.9	
		Perfluoropentanoic acid (PFPeA)	NG/L	71.8		140		1.9	J	5.4		51.4		3.3	J	2	J	157	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U

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		SDG	FA99047													
		Location	JMW8011		JPZ0686		JPZ1382		JPZ1382		JPZ1780		MMW8015		OW16001		OW24001	
		Sample Date	9/17/2022		9/18/2022		9/17/2022		9/17/2022		9/18/2022		9/17/2022		9/18/2022		9/18/2022	
		Sample ID	LORNG_JMW8011_09172022FD		LORNG_JPZ0686_09182022		LORNG_JPZ1382_09172022		LORNG_JPZ1382_09172022FD		LORNG_JPZ1780_09182022		LORNG_MMW8015_09172022		LORNG_OW16001_09182022		LORNG_OW24001_09182022	
		QC Code	FD		N		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2.6	J	3.7	U	3.7	U	3.7	U	4.3	U	2.7	J	4	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	140		3.7	U	3.7	U	3.7	U	4.3	U	136		3	J	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	52		3.7	U	3.7	U	3.7	U	4.3	U	35.8		4	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4	U	3.7	U	3.7	U	3.7	U	4.3	U	3.7	U	4	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4	U	19	R	19	UJ	19	U	4.3	UJ	37	R	4	UJ	3.7	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4	U	3.7	U	3.7	U	3.7	U	4.3	U	3.7	U	4	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	35.1		1.1	J	1.9	U	1.9	U	2.5	J	34.3		1.1	J	0.96	J
		Perfluorobutanoic acid (PFBA)	NG/L	50.6		4	J	3.7	U	3.7	U	6.2	J	46.9		11.7		8.4	
		Perfluorodecane sulfonate (PFDS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	2.2	U	1.9	U	2	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	J	1.9	U	1.9	U	1.9	U	2.2	U	1.5	J	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	2.2	U	1.9	U	2	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	39.8		1.9	U	1.9	U	1.9	U	2.2	U	34		2	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	104		1.7	J	1.9	U	1.9	U	6.2		90.2		2.5	J	5.5	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1450		11.4		1.6	J	1.8	J	59.1		1280		12.8		6.8	
		Perfluorohexanoic acid (PFHxA)	NG/L	314		2.5	J	1.9	U	1.9	U	11.2		299		5.7		8.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	5.8		1.9	U	1.9	U	1.9	U	2.2	U	4		2	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	21		1.9	U	1.9	U	1.9	U	2.2	U	16.1		2	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	39.1		1.9	U	1.9	U	1.9	U	2.2	U	30.3		2	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2170		10.7		2	J	2.1	J	48.6		1670		3.6	J	6.5	
		Perfluorooctanoic acid (PFOA)	NG/L	323		4.3		1.1	J	1	J	11.9		315		6.2		3.4	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	54.7		1.3	J	1.9	U	1.9	U	3.4	J	52.7		1	J	1.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	152		2.7	J	1.9	U	1.9	U	10.2		140		4.9		21.3	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	2.2	U	1.9	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	2.2	U	1.9	U	2	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	2.2	U	1.9	U	2	U	1.9	U

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Former Loring Air Force Base, Limestone, Maine

		SDG	FA99047					FA99090		
		Location	RFW1144	RFW1147	UNK-044	USGS2		044-RW01	AA07MW-01	AA07MW-02
		Sample Date	9/17/2022	9/17/2022	9/18/2022	9/17/2022		9/19/2022	9/20/2022	9/20/2022
		Sample ID	LORNG_RFW1144_09172022	LORNG_RFW1147_09172022	LORNG_UNK-044_09182022	LORNG_USGS-2_40_09172022	LORNG_USGS-2_125_09172022	LORNG_044-RW01_09192022	LORNG_AA07MW01_09202022	LORNG_AA07MW02_09202022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U	14.2	30.9
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3 J	3.7 U	2 J	2 J	3.7 U	1300	737 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U	250	121
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 UJ	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 UJ	3.7 U	19 UJ	3.6 R	19 U	3.7 UJ	37 R	37 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.7 J	10	1.9 J	1.8 J	1.7 J	1.9 U	59.9	99
		Perfluorobutanoic acid (PFBA)	NG/L	7.6	20	3.7 U	8.1	8.1	3.7 U	367	118
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	4.3	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	23	1.7 J
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	7.3	1.9 U	1.8 U	1.9 U	1.9 U	122	70.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	5	30.8	3.3 J	5.7	5.7	1.9 U	1600	195
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	22.7	395	87.3	26.1	24.8	1.9 U	2440	1560
		Perfluorohexanoic acid (PFHxA)	NG/L	7	65.9	14	8.6	8.4	1.9 U	2340	509
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.3 J	1.9 U	1.8 U	1.9 U	1.9 U	48.4	5.6
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	7.2	1.9 U	1.8 U	1.9 U	1.9 U	336	22.5
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	10.4	1.9 U	1.8 U	1.9 U	1.9 U	885	64.3
		Perfluorooctanesulfonic acid (PFOS)	NG/L	28.3	322	18.3	39.1	36.7	1.9 U	9490	2610
		Perfluorooctanoic acid (PFOA)	NG/L	6.9	61.3	40.7	8.5	8.3	1.9 U	2340	543
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 J	17.7	2.4 J	2.3 J	2.2 J	1.9 U	103	142
		Perfluoropentanoic acid (PFPeA)	NG/L	12.2	49.8	1.2 J	14.3	13.8	1.9 U	2990	443
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	3.1 J	1.9 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample result is considered unusable for preoject objectives
NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99090															
		Location		AA07MW-02		FIELDQC			IDW-EFF		JBW7335A		JBW7336A		JBW7347B		JBW7710B		
		Sample Date		9/20/2022		9/19/2022		9/20/2022	9/20/2022		9/19/2022		9/19/2022		9/19/2022		9/20/2022		
		Sample ID		LORNG_AA07MW02_09202022FD		LORNG_EB050_09192022		LORNG_EB051_09202022	LORNG_IDW-EFF04_09202022		LORNG_JBW7335A_09192022		LORNG_JBW7336A_09192022		LORNG_JBW7347B_09192022		LORNG_JBW7710B_09202022		
		QC Code		FD		EB		EB	N		N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	31.2		3.7	U	3.5 U	3.7	U	3.7	U	3.7	U	3.7	U	4	U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1030	J	3.7	U	41	3.7	U	10.9	U	3.7	U	3.7	U	9.3		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	117		3.7	U	3.5 U	3.7	U	3.7	U	3.7	U	3.7	U	4	U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	3.7	U	3.5 U	3.7	U	3.7	U	3.7	U	3.7	U	4	U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	37	UJ	3.7	U	3.5 U	3.7	R	3.7	R	3.7	UJ	3.7	UJ	20	R	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	3.7	U	3.5 U	3.7	U	3.7	U	3.7	U	3.7	U	4	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	101		1.9	U	1.8 U	1.9	U	2.5	J	3	J	1.1	J	2.9	J	
		Perfluorobutanoic acid (PFBA)	NG/L	119		3.7	U	3.5 U	3.7	U	8.1		5.9	J	2.5	J	9.1		
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.6	J	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	73.3		1.9	U	1.8 U	1.9	U	1.9	U	1.9	J	1.9	U	1.7	J	
		Perfluoroheptanoic acid (PFHpA)	NG/L	198		1.9	U	1.8 U	1.9	U	7.7		5.1		2.1	J	6		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1760		1.9	U	1.8 U	1.9	U	31.5		49.4		18.2		46.1		
		Perfluorohexanoic acid (PFHxA)	NG/L	516		1.9	U	1.8 U	1.9	U	10.1		7.8		2.8	J	11.2		
		Perfluorononanesulfonic acid (PFNS)	NG/L	4.7		1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluorononanoic acid (PFNA)	NG/L	23.5		1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	1.2	J	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	67.3		1.9	U	1.8 U	1.9	UJ	1.9	U	1.9	U	1.9	U	2	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2510		1.9	U	1.8 U	1.9	U	28		39.5		13.8		46.2		
		Perfluorooctanoic acid (PFOA)	NG/L	574		1.9	U	1.8 U	1.9	U	7.9		8		4.4		11		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	153		1.9	U	1.8 U	1.9	U	2.9	J	4.6		1.5	J	4.1		
		Perfluoropentanoic acid (PFPeA)	NG/L	449		1.9	U	1.8 U	1.9	U	13.7		8.9		2.7	J	13.2		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.8 U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	

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Checked by: CLC
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA99090								FA99090	
			Location	JBW7738A		JBW7738B	JBW8009	JMW0301C	JMW-0603	JMW0681			
			Sample Date	9/20/2022		9/20/2022	9/19/2022	9/19/2022	9/19/2022	9/19/2022			
			Sample ID	LORNG_JBW7738A_09202022	LORNG_JBW7738A_09202022FD	LORNG_JBW7738B_09202022	LORNG_JBW8009_09192022	LORNG_JMW0301C_09192022	LORNG_JMW0603_09192022	LORNG_JMW0681_09192022	LORNG_JMW0681_09192022FD		
			QC Code	N	FD	N	N	N	N	N	FD		
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	4	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.7	J	2.9	J	3.7	U	4	U	4.7	J	2.5	J	3.7	U	3.7	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	4	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	4	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	UJ	4	UJ	3.7	UJ	4	UJ	3.7	UJ	3.7	UJ	3.7	UJ	3.7	UJ	3.7	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	4	U	3.7	U	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	15.6		15.6		21.4		1.7	J	9.8		1.9	U	2.1	J	2.1	J		
		Perfluorobutanoic acid (PFBA)	NG/L	10.7		11.5		14.3		8		12.2		6.8	J	2.9	J	2.9	J		
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	2	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	1.9	U	2	UJ	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	5.5		6.1		8.4		2	U	3.1	J	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	8.7		8.8		12.3		7		17.2		1.9	U	1.4	J	1.2	J		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	86.8		91.4		124		18.8		213		5.4		15.5		14.5			
		Perfluorohexanoic acid (PFHxA)	NG/L	31.3		33.4		45.4		8.2		45.5		1.9	U	2.5	J	2.3	J		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.2	J	2	U	1.9	U	2	U	1.5	J	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U	1.9	U	2	U	5.3		1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	154		169		234		23.3		125		1.8	J	10.1		9.8			
		Perfluorooctanoic acid (PFOA)	NG/L	12.1		13		16.9		5.6		49.9		2.5	J	2.1	J	2.2	J		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	16.7		17.6		24.2		2.1	J	7.7		1.9	U	2.4	J	2.3	J		
		Perfluoropentanoic acid (PFPeA)	NG/L	22.6		23.8		31.8		16.1		30.9		3.6	J	2.9	J	2.5	J		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	UJ	2	UJ	1.9	U	2	UJ	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	1.9	U	2	UJ	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

Notes:
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Table 2 - Summary of Analytical Results

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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA99090						FA99400	
			Location	JMW0683	JMW1565	JPZ0342	MMW0006	MMW0326	OW17003	AA11MW-01	AA11MW-02
			Sample Date	9/19/2022	9/20/2022	9/19/2022	9/20/2022	9/20/2022	9/19/2022	9/28/2022	9/28/2022
			Sample ID	LORNG_JMW0683_09192022	LORNG_JMW1565_09202022	LORNG_JPZ0342_09192022	LORNG_MMW0006_09202022	LORNG_MMW0326_09202022	LORNG_OW17003_09202022	LORNG_AA11MW01_09282022	LORNG_AA11MW02_09282022
			QC Code	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	4 J	3.7 U	4 U	4 U	4 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.4 J	36.1	63.6	4 U	4 U	371	2.4 J	2 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	4 U	4.4 J	4 U	4 U	4 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	4 U	3.7 U	4 U	4 U	4 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 R	20 R	3.7 UJ	3.4 UJ	20 R	20 R	3.7 UJ	3.7 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	4 U	3.7 U	4 U	4 U	4 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.7 J	36.3	16.1	1.2 J	2 U	2 U	15.6	15.1
		Perfluorobutanoic acid (PFBA)	NG/L	7.2 J	97.5 J	24.8	6.2 J	3.3 J	20 U	9.7	10.7
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	2 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	2 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	2 U	1.9 U	2 UJ	2 U	2 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.2 J	5.7	9.2	2 U	2 U	2 U	8.8	9
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.8	133	36.2	1.1 J	1.3 J	2 U	13.5	13.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	59.8	315	350	3.5 J	2.5 J	2 U	133	141
		Perfluorohexanoic acid (PFHxA)	NG/L	14.1	320	94.1	2.5 J	3.3 J	2 U	35.5	36.4
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	2 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	14.1	3.5 J	1.6 J	2 U	2 U	1.4 J	1.3 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	10 U	2 U	7.8	1.7 U	2 U	2 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	172	145	310	11	4.5	2 U	363	363
		Perfluorooctanoic acid (PFOA)	NG/L	22.4	138	112	2.5 J	2.3 J	2 U	17.6	18.8
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.9	36.3	22.7	2 U	2 U	2 U	18.5	18.5
		Perfluoropentanoic acid (PFPeA)	NG/L	9.4	500	82	7.6	6	10 UJ	22	22.6
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	2 U	1.9 U	2 UJ	2 UJ	2 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	2 U	1.9 U	2 UJ	2 U	2 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	2 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U

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Former Loring Air Force Base, Limestone, Maine

		SDG		FA99400							
		Location		AA11MW-02	AA18MW-01	AA20MW-01	AA20MW-02	ASMW101	BW02002	BW03001	BW05011D
		Sample Date		9/28/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022	9/29/2022	9/29/2022	9/29/2022
		Sample ID		LORNG_AA11MW02_09282022FD	LORNG_AA18MW01_09282022	LORNG_AA20MW01_09282022	LORNG_AA20MW02_09282022	LORNG_ASMW101_09272022	LORNG_BW02002_09292022	LORNG_BW03001_09292022	LORNG_BW05011D_09292022
		QC Code		FD	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	3.7 U	3.7 U	3.7 U	4 U	3.6 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.8 J	9.2	3.7 U	3.7 U	3.7 U	4 U	3.6 U	102
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U	3.7 U	3.7 U	3.7 U	4 U	3.6 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.7 U	3.7 U	3.7 U	4 U	3.6 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 UJ	3.6 UJ	3.7 UJ	3.7 UJ	3.7 R	20 R	18 R	20 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.7 U	3.7 U	3.7 U	4 U	3.6 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	14	23.2	30.6	108	3.2 J	2 U	1.8 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	9.7	11.7	6.5 J	12.8	7.3 J	4 U	3.6 U	4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	8.1	10.1	33.9	13.2	1.1 J	2 U	1.8 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	13.1	24.8	6.9	17.5	9.2	2 U	1.8 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	130	425	585	489	46.6	2 U	1.8 U	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	32.8	80.2	25.8	93.4	14.1	2 U	1.5 J	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.3 J	2.9 J	2.1 J	1.9 U	1.7 J	2 U	1.8 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	49.6	1.9 U	1.9 U	1.9 U	2 U	1.8 U	10 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	326	408	1550	310	56.9	2 U	1.8 U	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	17.6	114	17.2	25.7	9.7	2 U	1.8 U	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	17.1	24.7	51.4	117	3.5 J	2 U	1.8 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	21.4	25.4	8	26.4	13.7	2 U	1.8 U	12
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	2 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample result is considered unusable for preoject objectives
NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99400							
		Location	BW05011S	BW07001	BW07002	BW07003	BW10007	BW12005		
		Sample Date	9/29/2022	9/27/2022	9/27/2022	9/27/2022	9/29/2022	9/28/2022		9/27/
		Sample ID	LORNG_BW05011S_09292022	LORNG_BW07001_09272022	LORNG_BW07002_09272022	LORNG_BW07003_09272022	LORNG_BW10007_09292022	LORNG_BW12005_09282022	LORNG_EB052_092720222	LORNG_EB053_092720222
		QC Code	N	N	N	N	N	N	EB	EB
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	3.7 U	3.7 U	10.1	3.6 U	7.1 J	3.6 U	4.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4.9 J	3.7 U	21.6	525	17.5	198	3.6 U	4.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	3.7 U	3.7 U	109	3.6 U	40	3.6 U	4.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.6 U	4.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 U	3.7 U	3.7 U	74 UJ	3.6 UJ	3.7 U	3.6 U	4.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.6 U	4.1 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	7.6	7.4	98.8	1.8 U	150	1.8 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	23.7	12.8	96.1	4.8 J	56.5	3.6 U	4.1 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	1.9 U	1.9 U	1.3 J	1.8 U	1.9 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	3.4 J	4.5	90.1	1.8 U	94.5 J	1.8 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	28.7	16.7	162	3.1 J	60.2	1.8 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.8	106	158	1210	8.6	800	1.8 U	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	36.9	38.4	331	7	366	1.8 U	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	3.9	1.8 J	39.9	1.8 U	2.1 J	1.8 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	10 U	1.9 U	3.1 J	3.2 J	1.8 U	7.7	1.8 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	21	84.7	94.6	4040	4.2	3410	1.8 U	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	1.2 J	33.8	41	318	3.6	126	1.8 U	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	11	8.8	151 J	1.1 J	150	1.8 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	40	53.2	37.5	376	9.8	137	1.8 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U

Notes:
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U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and reporting limit considered estimatec
R = Sample result is considered unusable for preoject objectives
NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

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Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99400							
		Location	FIELDQC						FIELDQC	
		Sample Date	2022		9/28/2022		9/29/2022		9/29/2022	10/2/2022
		Sample ID	LORNG_EB054_0927 2022	LORNG_EB055_0927 2022	LORNG_EB056_0928 2022	LORNG_EB057_0928 2022	LORNG_EB058_0929 2022	LORNG_EB059_0929 2022	LORNG_EB060_0929 2022	LORNG_EB068_1002 2022
		QC Code	EB	EB	EB	EB	EB	EB	EB	EB
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	5.7 J	3.6 U	3.6 U	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 U	18 U	36 U	18 U	18 U	18 U	3.6 U	3.6 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.8 U	18 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.8 U	18 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	8.9 U	18 U	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.8 U	18 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.8 U	18 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

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Date: 12/13/22
Checked by: CLC
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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99400							
		Location		FIEDLQC	GC_BW002D	GC_BW002S	JBW7316	JBW7335B	JBW7338B	JBW7339A	JBW7341B
		Sample Date		10/2/2022	9/28/2022	9/28/2022	9/29/2022	9/28/2022	9/27/2022	9/27/2022	9/27/2022
		Sample ID		LORNG_EB069_10022022	LORNG_GC_BW002D_09282022	LORNG_GC_BW002S_09282022	LORNG_JBW7316_09292022	LORNG_JBW7335B_09282022	LORNG_JBW7338B_09272022	LORNG_JBW7339A_09272022	LORNG_JBW7341B_09272022
		QC Code		EB	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.7 U	4.8 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	6.8 J	4.8 U	3.6 U	3.7 U	3.7 U	81	104 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.7 U	4.8 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.7 U	4.8 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 U	3.7 UJ	23 R	18 UJ	3.7 UJ	3.7 UJ	3.7 UJ	3.7 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.7 U	4.8 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.9 U	2.4 U	2 J	3.3 J	7.7	22.6	2.1 J
		Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	3.7 U	4.8 U	3.6 J	7.8	35 J	30.6	6.6 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	9.6	1.3 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	1.9 U	2.4 U	2.2 J	7.1	11.6	40.6	4.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	1.9 U	2.4 U	38.6	33.4	60.9	404	59.7 J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	1.9 U	2.4 U	2.5 J	10.1	19.1	126	17
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	3.7	1.1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	8.9 U	9.3 U	2.4 U	1.8 U	1.9 U	1.9 U	9.4	2.1 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.9 U	2.4 U	30.5	30.3	26.4	279	58.1
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	1.9 U	2.4 U	4.2	8.5	21.7	140	15.5
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.9 U	2.4 U	2.7 J	3.3 J	7.4	24.4	2 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	1.9 U	2.4 U	2 J	11.9	27	101	9.8
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	2.4 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U

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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99400							
		Location		JBW7345B	JBW7348	JBW7350	JBW7614	JBW7734	JBW7737A	JBW7737B	JBW7752
		Sample Date		9/27/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022	9/28/2022	9/28/2022	9/28/2022
		Sample ID		LORNG_JBW7345B_09272022	LORNG_JBW7348_09282022	LORNG_JBW7350_09282022	LORNG_JBW7614_09282022	LORNG_JBW7734_09272022	LORNG_JBW7737A_09282022	LORNG_JBW7737B_09282022	LORNG_JBW7752_09282022
		QC Code		N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	3.8 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.6 U	3.7 U	3.6 U	3.6 U	9.6	3.7 U	3.8 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	3.8 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	3.8 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 UJ	3.6 UJ	3.7 U	18 UJ	18 UJ	3.7 UJ	3.7 U	3.8 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	3.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.3 J	1.7 J	2.1 J	1.8 U	4.4	22.7	16.5	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	4.1 J	2.8 J	2.8 J	3.6 U	5.8 J	11.3	10.9	2 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	2.7 J	9.6	9.9	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.6	2.9 J	4.5	1.8 U	8	11.6	14.9	1.3 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	36.6	15.6	24	1.9 J	72	114	144	5.3
		Perfluorohexanoic acid (PFHxA)	NG/L	11.6	4.9	7.7	1.8 U	9.7	45.6	39	2.3 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1 J	1.9 U	1.6 J	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	42.3	25.8	13	2.9 J	95.8	318	416	4.4
		Perfluorooctanoic acid (PFOA)	NG/L	11.5	4.5	8.8	1.5 J	11.3	17.6	20.1	1.6 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.8 J	1.4 J	1.6 J	1.8 U	6.3	22	19.9	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	9.6	4	5.5	1.1 J	7.5	26.8	25	2.9 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 UJ	1.8 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U

Notes:
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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99400									
		Location	JBW7753A	JMW0682		JMW1665		JMW1684	JMW6001			
		Sample Date	9/27/2022	9/28/2022		9/27/2022		9/27/2022	9/28/2022			
		Sample ID	LORNG_JBW7753A_09272022	LORNG_JMW0682_09282022	LORNG_JMW0682_09282022FD	LORNG_JMW1665_09272022	LORNG_JMW1665_09272022FD	LORNG_JMW1684_09272022	LORNG_JMW6001_09282022	LORNG_JMW6001_09282022FD		
		QC Code	N	N	FD	N	FD	N	N	FD		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	4.1 U	3.8 U	3.7 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	21.6	3.7 U	3.7 U	6.6 J	8	3.7 U	33.4 J	57.8 J	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	4.1 U	3.8 U	3.7 U	3.7 U	3.7 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	4.1 U	3.8 U	3.7 U	3.7 U	3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 U	3.7 R	3.7 UJ	4.1 UJ	19 UJ	3.7 UJ	3.7 UJ	19 UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	4.1 U	3.8 U	3.7 U	3.7 U	3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	19.4	2.2 J	2.2 J	3.6 J	3.5 J	1.6 J	1.9 U	1.9 U	
		Perfluorobutanoic acid (PFBA)	NG/L	19.3	2.3 J	2.7 J	6.6 J	6.1 J	3.3 J	4.2 J	4.2 J	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	17.1	1.9 U	1.9 U	1.3 J	1.3 J	1.9 U	1.9 U	1.9 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	51	1.9 U	1.9 U	6.8	6.6	2.3 J	1.8 J	2 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	220	13.4	13.8	46.2	45.5	15	3.9	3.2 J	
		Perfluorohexanoic acid (PFHxA)	NG/L	70.6	1.5 J	1.5 J	10.7	10	3.9	1.9 U	1.9 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	7.2	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	4.2	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1030	9.8	10.3	55.5	54.9	14.4	5.6	5	
		Perfluorooctanoic acid (PFOA)	NG/L	74	2 J	2.1 J	8.6	8.4	2.3 J	1.1 J	1.9 U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	26.5	2.1 J	2.1 J	4.6	4.5	1.8 J	1.9 U	1.9 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	49.8	1.7 J	1.8 J	10.6	10.2	4.6	1.9 U	1.9 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	

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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99400													
		Location		JMW7913		MMW0330		NP_BW001D		NP_BW001S		NP_OW001		OW01002		OW01003	
		Sample Date		9/29/2022		9/27/2022		9/29/2022		9/29/2022		9/29/2022		9/29/2022		9/29/2022	
		Sample ID		LORNG_JMW7913_09292022	LORNG_JMW7913_09292022FD	LORNG_MMW0330_09272022		LORNG_NP_BW001D_09292022		LORNG_NP_BW001S_09292022		LORNG_NP_OW001_09292022		LORNG_OW01002_09292022		LORNG_OW01003_09292022	
		QC Code		N	FD	N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U		3.6 U		3.9 U		3.6 U		5.1 J		3.6 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U		6.6 J		3.9 U		3.6 U		196		3.6 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U		3.6 U		3.9 U		3.6 U		117		3.6 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.8 U	3.6 U		3.6 U		3.9 U		3.6 U		4 U		3.6 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 UJ	3.8 UJ	3.6 U		18 UJ		20 UJ		18 UJ		40 UJ		18 UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.8 U	3.6 U		3.6 U		3.9 U		3.6 U		4 U		3.6 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.9 U	4.9		1.8 U		2 U		1.8 U		67.6		1.8 U	
		Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	3.8 U	6.4 J		3.6 U		3.9 U		3.6 U		86.7		3.6 U	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		2 U		1.8 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		6.4		1.8 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		2 U		1.8 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	2.5 J		1.8 U		2 U		1.8 U		66		1.8 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	1.9 U	7.7		1.8 U		2 U		1.8 U		161		1.8 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	1.9 U	65.6		1.8 U		2 U		1.8 U		2740		1.3 J	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	1.9 U	13		1.8 U		2 U		1.8 U		615		1.8 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		13.2 J		1.8 U	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		41.8		1.8 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	1.8 U		8.9 U		9.8 U		1.8 U		142		1.8 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.9 U	72.9		1.8 U		2 U		1.8 U		6450		1.8 U	
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	1.9 U	10.1		1.8 U		2 U		1.8 U		520		1.8 U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.9 U	6.6		1.8 U		2 U		1.8 U		83.6		1.8 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	1.9 U	10.5		21.8		2 U		1.8 U		244		1.8 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		8.9 U		80 U		1.8 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		2 U		1.8 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	1.8 U		1.8 U		2 U		1.8 U		2 U		1.8 U	

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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99400							FA99403
		Location		OW01004	OW05002	OW05004		OW16002	OW16003	USMW025	AA18MW-02
		Sample Date		9/29/2022	9/28/2022	9/28/2022		9/29/2022	9/29/2022	9/28/2022	9/30/2022
		Sample ID		LORNG_OW01004_09292022	LORNG_OW05002_09282022	LORNG_OW05004_09282022	LORNG_OW05004_09282022FD	LORNG_OW16002_09292022	LORNG_OW16003_09292022	LORNG_USMW025_09282022	LORNG_AA18MW02_09302022
		QC Code		N	N	N	FD	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	73.5	28	19.1	20.8	2.3 J	3.6 U	3.7 U	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	68.1	4 J	12.9	14.4	3.6 U	3.6 U	3.7 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 UJ	18 U	18 UJ	18 R	18 R	3.6 U	3.7 U	18 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	25.3	72.2	19.7	21	1.8 U	1.8 U	1.9 U	1.1 J
		Perfluorobutanoic acid (PFBA)	NG/L	40.7	31.9	50.5	54.2	4 J	6.4 J	3.5 J	4.6 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	19	29.3	15.3	15.4	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	101	54.7	134	144	1.4 J	1.8 U	2.3 J	4.5
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	825	729	351	376	3.9	5.1	18.8	9.3
		Perfluorohexanoic acid (PFHxA)	NG/L	185	85.2	82.8	88.8	6.1	1.8 U	3.9	6.5
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.8 U	2.5 J	2.8 J	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	13.4	13.5	11.9	12.5	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	15.2	2.1 J	1.9 J	1.8 J	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1150	869	634	679	1.1 J	1.3 J	19.4	5.3
		Perfluorooctanoic acid (PFOA)	NG/L	164	97	85.8	91.8	1.5 J	2.1 J	4.1	3.2 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	34.8	95	35.2	36.8	1.8 U	1.8 U	1 J	1 J
		Perfluoropentanoic acid (PFPeA)	NG/L	126	96.5	137	147	4.9	0.99 J	5.6	9.3
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U

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Date: 12/13/22
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403									
		Location	BB_BW001	BB_BW002	BB_OW001	BB_OW002		BW01006		BW01007		
		Sample Date	10/1/2022	10/1/2022	10/1/2022	10/1/2022		9/30/2022		9/30/2022		
		Sample ID	LORNG_BB_BW001_10012022	LORNG_BB_BW002_10012022	LORNG_BB_OW001_10012022	LORNG_BB_OW002_10012022	LORNG_BB_OW002_10012022FD	LORNG_BW01006_09302022	LORNG_BW01006_09302022FD	LORNG_BW01007_09302022		
		QC Code	N	N	N	N	FD	N	FD	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.7 U	4 U	3.6 U	19 U	3.6 U	3.6 U	3.7 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	4.2 J	4 U	3.6 U	3.7 U	3.6 U	3.6 U	21	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.7 U	4 U	3.6 U	3.7 U	3.6 U	3.6 U	3 J	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.7 U	4 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 U	19 U	20 UJ	18 U	19 U	18 U	18 UJ	19 R	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.7 U	4 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.94 J	1.9 U	6.7	1.8 U	1.9 U	2.7 J	2.9 J	11.2	
		Perfluorobutanoic acid (PFBA)	NG/L	3.2 J	3.7 U	10	3.6 U	19 U	2.6 J	2.7 J	22.5	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 UJ	1.8 U	1.8 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	9.3 UJ	8.9 U	8.9 U	1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	1.7 J	1.8 U	1.9 U	0.93 J	0.99 J	12.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.93 J	1.9 U	6.1	1.8 U	1.9 U	3.6	3.9	37.1	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.6	1.9 U	67.9	1.4 J	1.4 J	38.7	39.7	403	
		Perfluorohexanoic acid (PFHxA)	NG/L	4.4	1.9 U	20.5	1.8 U	1.9 U	4	4.2	92.1	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 U	1.8 U	1.8 U	5	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 U	1.8 U	1.8 U	4	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.9 U	51	1.8 U	1.9 U	22.6	22.7	498	
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 J	1.9 U	22.6	1.8 U	1.9 U	5.1	5.2	113	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.9 U	5.4	1.8 U	1.9 U	3 J	3.2 J	17.1	
		Perfluoropentanoic acid (PFPeA)	NG/L	4.5	1.9 U	18.4	1.8 U	1.9 U	3.9	4.1	67.9	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 U	1.9 U	10 UJ	1.8 UJ	9.3 UJ	1.8 U	8.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	9.3 UJ	8.9 U	8.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	2 U	1.8 U	1.9 UJ	1.8 U	1.8 U	1.9 U	

Notes:
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NG/L = nanogram per liter
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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403							
		Location	BW01008	BW01009	BW02001	BW03002	BW05008	BW05009	BW05010	BW06008
		Sample Date	9/30/2022	9/30/2022	9/30/2022	10/1/2022	10/2/2022	10/2/2022	10/2/2022	10/1/2022
		Sample ID	LORNG_BW01008_09302022	LORNG_BW01009_09302022	LORNG_BW02001_09302022	LORNG_BW03002_10012022	LORNG_BW05008_10022022	LORNG_BW05009_10022022	LORNG_BW05010_10022022	LORNG_BW06008_10012022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	4 U	3.6 U	3.6 U	3.6 U	3.7 U	4.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	50.5	4 U	14.6	3.6 U	484	3 J	4.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	31.9	4 U	3.6 U	3.6 U	89.8	3.7 U	4.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	4 U	3.6 U	3.6 U	3.6 U	3.7 U	4.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 R	19 UJ	20 U	3.6 R	18 U	36 UJ	19 UJ	20 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	4 U	3.6 U	3.6 U	3.6 U	3.7 U	4.1 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	8	11.2	2 U	2.8 J	4.1	101	1.9 U	1.1 J
		Perfluorobutanoic acid (PFBA)	NG/L	11.5	21.9	4 U	2.2 J	4.1 J	160	5 J	5.3 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	2 U	1.8 U	1.8 U	1.6 J	1.9 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	9.3 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	10 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.8	7.1	2 U	1.8 U	1.8 U	67.1	1.9 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	15	39.6	2 U	1.8 U	1.9 J	191	1.9 U	6.5
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	223	203	2 U	1.8 U	4.9	980	3.5 J	10.4
		Perfluorohexanoic acid (PFHxA)	NG/L	52.9	65.1	2 U	1.3 J	3.8	361	1.2 J	5.6
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.3 J	3.2 J	2 U	1.8 U	1.8 U	44.9	1.9 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	5.7	2 U	1.8 U	1.8 U	18.5	1.9 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	86.1	324	2 U	1.8 U	2.5 J	2550	3.5 J	16.7
		Perfluorooctanoic acid (PFOA)	NG/L	49.9	58	2 U	1.8 U	1.8 J	236	0.96 J	4.8
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	12.1	14.1	2 U	1.8 U	1.2 J	121	1.9 U	1.5 J
		Perfluoropentanoic acid (PFPeA)	NG/L	42.6	62.6	2 U	1.7 J	7.5	579	1 J	7.1
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	9.3 U	9.3 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	10 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	9.3 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	10 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	2 U

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403							
		Location	BW08003	BW09001	BW10008	BW12006	BW13001	BW13002	BW13003	BW16001
		Sample Date	10/1/2022	9/30/2022	10/2/2022	10/1/2022	10/2/2022	10/2/2022	10/2/2022	10/1/2022
		Sample ID	LORNG_BW08003_10012022	LORNG_BW09001_09302022	LORNG_BW10008_10022022	LORNG_BW12006_10012022	LORNG_BW13001_10022022	LORNG_BW13002_10022022	LORNG_BW13003_10022022	LORNG_BW16001_10012022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.7 U	6.3 U	18 U	4 U	3.6 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	11.5	23.8	71	4 U	6.6 J	13.6	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.7 U	6.3 U	18 UJ	4 U	3.6 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.7 U	31 U	18 UJ	4 U	18 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 U	19 UJ	31 U	18 UJ	20 U	18 UJ	18 UJ	18 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.7 U	31 U	18 U	4 U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.6	2.5 J	4.8 J	27.2	2 U	1.8 U	9.4	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	16.3	8.6	10.9 J	20.7 J	3.6 J	3.6 J	12.7	3.6 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.9 U	16 UJ	8.9 UJ	2 U	1.8 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	3.1 U	8.9 UJ	2 U	1.8 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	16 UJ	8.9 UJ	2 U	8.9 UJ	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	3.1 U	19.4	2 U	1.8 U	1.8 J	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	18.1	5.5	2.3 J	33.9	1.3 J	1.9 J	33.6	1.8 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	108	42.8	14.4	213	7.3	2.7 J	33.8	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	34.4	17.6	8	76.9	1.6 J	3.6	20.3	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	3.1 U	8.9 U	2 U	1.8 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	2.3 J	1.9 U	3.1 U	2.5 J	2 U	1.8 U	1.8 J	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	3.1 U	8.9 U	2 U	1.8 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	28.6	11.1	10.1	712	9.5	1.9 J	45.3	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	38.3	11.3	4.9 J	41.4	1.1 J	1.6 J	23.4	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	6	2 J	3.1 U	38	2 U	1.8 U	5.1	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	35.7	15	7.3	65.8	1.3 J	5.2	20.9	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 U	1.9 U	16 UJ	8.9 UJ	2 U	8.9 UJ	9.1 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	16 UJ	8.9 UJ	2 U	8.9 UJ	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	16 UJ	8.9 UJ	2 U	1.8 U	1.8 U	1.8 U

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Date: 12/13/22
Checked by: CLC
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403											
		Location	BW16002	BW18003	BW18006	BW18007		BW18008		BW18009		BW18010		
		Sample Date	10/1/2022	10/2/2022	9/30/2022	10/1/2022		10/1/2022		10/1/2022		10/2/2022		
		Sample ID	LORNG_BW16002_10012022	LORNG_BW18003_10022022	LORNG_BW18006_09302022	LORNG_BW18007_10012022	LORNG_BW18007_10012022FD	LORNG_BW18008_10012022		LORNG_BW18009_10012022		LORNG_BW18010_10022022		
		QC Code	N	N	N	N	FD	N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.6	U	4	U	3.6	U	3.6	U	3.6	U	18	U	5.9	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U	3.6	U	4	U	3.6	U	3.6	U	3.6	U	3.6	U	139	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.6	U	4	U	3.6	U	3.6	U	3.6	U	3.6	UJ	5.9	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	3.6	U	4	U	3.6	U	3.6	U	18	UJ	18	UJ	5.9	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18	U	18	R	20	UJ	18	UJ	18	UJ	18	R	18	UJ	29	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.6	U	4	U	3.6	U	3.6	U	18	U	18	UJ	5.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	1.8	U	2	U	1.8	U	3.2	J	1.8	U	4		10.7	
		Perfluorobutanoic acid (PFBA)	NG/L	2.1	J	2.4	J	2.5	J	3.1	J	3	J	3	J	3.6	U	5.6	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	UJ	2.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	8.9	UJ	2.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	8.9	U	8.9	UJ	2.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	2.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.8	U	1.7	J	1.8	U	1.8	U	1.8	U	1.1	J	2.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	1.5	J	4.6		2.7	J	2.7	J	16.4		8		2.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.3	J	1.3	J	2.3	J	1.3	J	1.2	J	1.4	J	1.2	J	9.2	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	UJ	2.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	2.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	8.9	U	1.8	U	2.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.3	J	2.3	J	2.4	J	2.4	J	19.6		1.8	UJ	2.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	U	1.8	U	1.9	J	1.1	J	1.1	J	2.7	J	1.1	J	2.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	2.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	J	1.9	J	4.1		1.8	U	1.8	U	1.8	U	1.8	U	1.7	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9	UJ	8.9	U	2	U	1.8	U	8.9	U	8.9	U	8.9	UJ	2.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	8.9	U	8.9	UJ	2.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	8.9	UJ	2.9	U

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Date: 12/13/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99403											
		Location		BW20001		BW20002		EBGB_BW001		EBGB_BW002		EBGB_OW002		FIELDQC	
		Sample Date		9/30/2022		10/2/2022		10/1/2022		9/30/2022		9/30/2022		9/29/2022	9/30/2022
		Sample ID		LORNG_BW20001_09302022		LORNG_BW20002_10022022		LORNG_EBGB_BW001_10012022		LORNG_EBGB_BW002_09302022		LORNG_EBGB_OW002_09302022		LORNG_EB061_09292022	LORNG_EB062_09302022	LORNG_EB063_09302022
		QC Code		N		N		N		N		N		EB	EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4.6	J	1.9	J	9.4		3.6	U	3.6	U	3.6 U	3.6 U	3.8 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	6.3	J	3.6	U	3.6	U	3.6	U	3.6	U	3.6 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	18	U	3.6	U	3.6	U	3.6	U	3.6 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	UJ	18	UJ	18	UJ	18	UJ	3.6	U	3.6 U	18 U	18 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4		2.1	J	2.1	J	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	10.6		7.9		34.1		3.6	U	3.6	U	3.6 U	3.6 U	3.6 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	8.9	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	8.9	UJ	1.8	U	8.9	U	1.8	U	1.8 U	8.9 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.4	J	1.8	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	22.9		9.3		1	J	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	110		33.8		2.8	J	5.8		2.9	J	1.8 U	1.8 U	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	21.8		10.9		3.8		1.5	J	1.3	J	1.8 U	1.8 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	2.6	J	1.8	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.5	J	1.8	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	158		26.6		1.9	J	8.7		1.8	U	1.8 U	1.8 U	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	25		10.9		1.4	J	1.8	J	1.6	J	1.8 U	1.8 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	5.8		2.8	J	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	23.1		13		2.7	J	1.8	J	1.5	J	1.8 U	1.8 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	8.9	UJ	8.9	U	1.8	U	1.8	U	1.8 U	8.9 U	8.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	8.9	UJ	1.8	U	8.9	U	1.8	U	1.8 U	8.9 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	8.9	U	1.8	U	1.8	U	1.8	U	1.8 U	1.8 U	1.8 U

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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99403							
		Location		FIELDQC				GC_BW001	JBW7339B	JMW-0505	OW02002
		Sample Date		9/30/2022	10/1/2022			10/2/2022	10/1/2022	10/1/2022	10/3/2022
		Sample ID		LORNG_EB064_09302022	LORNG_EB065_10012022FD	LORNG_EB066_10012022FD	LORNG_EB067_10012022FD	LORNG_GC_BW001_10022022	LORNG_JBW7339B_10012022	LORNG_JMW0505_10012022	LORNG_OW02002_10032022
		QC Code		EB	EB	EB	EB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	5.3 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.6 U	3.6 U	3.6 U	3.6 U	10.2	3.6 U	5.3 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	5.3 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	2.9 J
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 U	18 U	18 U	18 U	18 UJ	18 UJ	18 UJ	26 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3 J
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	4.3	1.1 J	2.6 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U	3.6 U	3.6 U	3.6 U	5.1 J	9.2	4.8 J	5.3 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.6 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.6 J
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.8 U	8.9 U	8.9 U	9.1 U	8.9 U	1.8 UJ	2.6 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.7 J	1.8 U	2.6 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	10.9	7	1.4 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	105	13.1	5.7
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	23.8	5.3	3.6 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.6 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2.3 J	1.2 J	2.6 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	8.9 U	1.8 U	1.8 U	1.8 U	4.3	1.8 U	3 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	99.8	17.5	9.8
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	27.6	5.9	5.8
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	5.4	1.5 J	2.6 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	20.1	6.1	2.6 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	8.9 U	8.9 U	8.9 U	9.1 U	1.8 UJ	1.8 UJ	13 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.8 U	8.9 U	8.9 U	9.1 U	8.9 U	1.8 UJ	2.6 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.6 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403											
		Location	OW05003	OW07002	OW07003	OW08001		OW08002	OW09001	OW17002				
		Sample Date	10/1/2022	9/30/2022	10/2/2022	9/30/2022		9/30/2022	9/30/2022	10/2/2022				
		Sample ID	LORNG_OW05003_10012022	LORNG_OW07002_09302022	LORNG_OW07003_10022022	LORNG_OW08001_09302022	LORNG_OW08001_09302022FD	LORNG_OW08002_09302022	LORNG_OW09001_09302022	LORNG_OW17002_10022022				
		QC Code	N	N	N	N	FD	N	N	N				
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.6	U	11.5		3.6	U	3.6	U	3.8	U	18	U	3.6	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	20.7		3.6	U	457		14		14.2		19.3		3.6	U	3.6	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	2.6	J	88.6		3.6	U	3.6	U	3.8	U	3.6	UJ	3.6	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	18	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	18	U	3.6	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	UJ	18	UJ	36	U	18	UJ	18	UJ	3.8	U	18	UJ	18	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	18	U	3.6	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	18.4		6		87.8		14.5		14.6		18.1		5.9		2.4	J
		Perfluorobutanoic acid (PFBA)	NG/L	25.9		17.7		85.1		26.4		26.8		32.6		11.1		26.3	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	8.9	UJ	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.3	J	1.8	U	1.8	U	1.9	U	8.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	8.9	UJ	8.9	U	18	UJ	8.9	U	8.9	U	1.9	U	8.9	UJ	8.9	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	19		5		67.7		10.1		10.3		11.2		8.9	U	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	45.9		25.5		144		36.2		36.9		48		18.6		22.3	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	268		106		1080		314		319		404		215		32.9	
		Perfluorohexanoic acid (PFHxA)	NG/L	45.1		29.2		282		87		87.7		117		42.6		30	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	8.9	U	1.8	U
		Perfluorononanoic acid (PFNA)	NG/L	13.3		6.4		26.3		3.7		3.6		4.5		1.7	J	1.3	J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	4.3		4.6		5.2		13.4		6.3		1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1130		201		3420		324		333		342		148		42.5	J
		Perfluorooctanoic acid (PFOA)	NG/L	45.4		28.4		278		89.6		92		128		44		12.6	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	31.6		10.5		129		21.8		21.8		24.7		7.4		3.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	76.4		40		345		89.7		90.5		103		32.4		70.3	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	8.9	U	1.8	U	8.9	U	1.8	U	1.9	U	8.9	UJ	8.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	8.9	UJ	8.9	U	18	UJ	8.9	U	8.9	U	1.9	U	8.9	UJ	8.9	UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	8.9	UJ	1.8	U

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Date: 12/13/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99403							
		Location	OW20001	OW20002	OW20003	OW20004	OW20005	OW20006	OW20007	OW23001
		Sample Date	9/30/2022	9/30/2022	10/1/2022	10/2/2022	10/2/2022	10/1/2022	9/30/2022	10/2/2022
		Sample ID	LORNG_OW20001_09302022	LORNG_OW20002_09302022	LORNG_OW20003_10012022	LORNG_OW20004_10022022	LORNG_OW20005_10022022	LORNG_OW20006_10012022	LORNG_OW20007_09302022	LORNG_OW23001_10022022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	2.1 J	3.6 U	3.6 U	3.6 U	3.7 U	28.9	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	18 U	3.6 U	3.7 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 R	3.6 U	18 UJ	18 U	18 UJ	19 U	18 U	18 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.6 J	3.4 J	1 J	1.6 J	3.6 J	3.2 J	4.6
		Perfluorobutanoic acid (PFBA)	NG/L	2 J	4.7 J	2 J	3.6 U	3.3 J	10.9	8.4	8.8
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	8.9 U	1.8 U	1.8 U	8.9 UJ	1.8 U	9.3 UJ	8.9 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 U	2.7 J	1.8 U	1.8 U	2.5 J	2.7 J	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1 J	4.7	1.8 U	1.8 U	2.8 J	22.2	17.2	9.2
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.3	21.1	41.9	9.3	18.6	88.1	89.2	28.4
		Perfluorohexanoic acid (PFHxA)	NG/L	1.3 J	5.4	1.6 J	1.8 U	3.5 J	19.7	15.3	12.2
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3 J	1.8 J	1.1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4.2	15	61.7	11.2	22.5	140	112	33
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	4.9	2 J	1.8 U	3.8	25.1	19.8	8.6
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.8 J	4.4	1.3 J	2 J	5.3	4.7	3.6
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 J	7.5	1.7 J	1.8 U	4.7	22.4	16.6	17.1
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 U	8.9 U	1.8 U	8.9 UJ	1.8 U	9.3 UJ	1.8 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	8.9 U	1.8 U	1.8 U	8.9 UJ	1.8 U	9.3 UJ	8.9 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA99403			FA99474		FA99474		
			Location	WBGB_BW001		WWTP_WSW	BW06007	BW17005	BW18004	BW22001	FIELDQC
			Sample Date	10/1/2022		9/30/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022
			Sample ID	LORNG_WBGB_BW001_10012022	LORNG_WBGB_BW001_10012022FD	LORNG_WWTP_WSW_09302022	LORNG_BW06007_10032022	LORNG_BW17005_10032022	LORNG_BW18004_10032022	LORNG_BW22001_10032022	LORNG_EB070_10032022
			QC Code	N	FD	N	N	N	N	N	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	18 U	3.6 U	3.7 U	3.7 U	4.3 U	3.5 U	3.5 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	266	3.7 U	122	3.5 U	3.5 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	107	3.7 U	4.3 U	3.5 U	3.5 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.7 U	3.7 U	4.3 U	18 UJ	18 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 UJ	18 UJ	18 UJ	3.7 U	3.7 U	4.3 UJ	18 U	18 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.7 U	3.7 U	4.3 U	18 U	3.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.8 U	1.8 U	21.1	2.4 J	2.1 U	1.8 U	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	1.8 J	2 J	3.6 U	121	11.3	4.3 U	3.5 U	3.5 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 UJ	1.8 U	9.3 U	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 UJ	1.8 U	1.7 J	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	8.9 UJ	8.9 UJ	1.8 U	9.3 U	9.3 U	2.1 U	8.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 U	1.8 U	9.4	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 J	2.1 J	1.8 U	200	15.9	2.1 U	1.8 U	1.8 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	6.3	6.7	8.3	175	26.4	2.1 U	1.6 J	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	3.4 J	3.4 J	1.8 U	188	18.3	6	1.8 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.8 U	1.8 U	19.1	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.8 U	1.8 U	3.4 J	1.9 U	2.1 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6.5	6.5	6.3	355	24.6	2.1 U	1.7 J	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	2.1 J	2.1 J	1.1 J	102	9.4	2.1 U	1.8 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.4 J	1.7 J	1.8 U	27.7	2.3 J	2.1 U	1.8 U	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.3 J	3.2 J	1.8 U	354	25.8	2.1 U	1.8 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 UJ	8.9 UJ	8.9 U	9.3 U	9.3 U	2.1 U	1.8 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	8.9 UJ	8.9 UJ	1.8 U	9.3 U	9.3 U	2.1 U	8.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	8.9 UJ	1.8 U	9.3 U	1.9 U	2.1 U	1.8 U	1.8 U

Notes:
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Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA99474					FC165		
		Location	FIELDQC	OW07001	OW10007	OW12002	OW22003	BW05011D	BW05011S	BW06006
		Sample Date	10/3/2022	10/4/2022	10/3/2022	10/3/2022	10/3/2022	10/26/2022	10/26/2022	10/25/2022
		Sample ID	LORNG_EB071_10032022	LORNG_OW07001_10042022	LORNG_OW10007_10032022	LORNG_OW12002_10032022	LORNG_OW22003_10032022	LORNG_BW05011D_10262022	LORNG_BW05011S_10262022	LORNG_BW06006_10252022
		QC Code	EB	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.5 U	3.5 U	3.5 U	3.5 U	4.3 U	3.6 UJ	3.6 UJ	3.6 UJ
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.5 U	76.3	3.5 U	42.4	4.3 U	16.3	3.6 U	48.3
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.5 U	3 J	3.5 U	3.5 U	4.3 U	3.6 U	3.6 U	19.6
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.5 U	3.5 U	3.5 U	3.5 U	4.3 U	3.6 U	3.6 U	18 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.5 U	3.5 UJ	18 R	3.5 U	22 U	18 UJ	18 R	18 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.5 U	3.5 U	3.5 U	3.5 U	4.3 U	3.6 U	3.6 U	18 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	77.7	2.3 J	13.4	2.2 U	1.8 U	1.8 U	38.1
		Perfluorobutanoic acid (PFBA)	NG/L	3.5 U	89.1	7.2	22.7	4.9 J	3.6 UJ	3.6 UJ	82.8
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 U	1.8 U	1.8 UJ
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.5 J	1.8 U	1.8 U	2.2 U	1.8 U	1.8 U	1.8 UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 UJ	1.8 UJ	1.8 UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	83	1.8 U	13.5	2.2 U	1.8 U	1.8 U	21.7
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	138	3 J	33.4	2.7 J	1.8 U	1.8 UJ	126
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	757	10.4	180	22.9	1.8 U	3.1 J	354
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	164	8.4	47.3	4.6	1.8 U	1.8 UJ	147
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	6.9 J	1.8 U	1.8 U	2.2 U	1.8 U	1.8 U	1.8 UJ
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	32.6	1.8 U	3.2 J	2.2 U	1.8 U	1.8 U	19.6
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	3 J	1.8 U	1.8 U	2.2 U	1.8 U	1.8 UJ	8.3
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	3150	8.8	480	32.9	1.8 U	14.8	953
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	147	3.9	29.5	5.8	1.8 U	1.8 UJ	102
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	109	1 J	21.8	2.2 U	1.8 U	1.8 U	46
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	239	9.2	62.1	5.9	2.7 J	15.5 J	209
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 UJ	1.8 UJ	1.8 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 UJ	1.8 UJ	1.8 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 U	1.8 U	1.8 UJ

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FC165									
		Location		BW17006	FIELDQC				FIELDQC		GC_BW002D		
		Sample Date		10/26/2022	10/26/2022			10/25/2022	10/27/2022		10/25/2022		
		Sample ID		LORNG_BW17006_10262022	LORNG_EB072_10262022	LORNG_EB073_10262022	LORNG_EB075_10262022	LORNG_EB074_10252022	LORNG_EB076_10272022	LORNG_EB077_10272022	LORNG_GC_BW002D_10252022		
		QC Code		N	EB	EB	EB	EB	EB	EB	N		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 UJ		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4.8 J	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.1 J		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	36 R	18 U	18 U	18 U	18 U	18 U	18 U	19 R		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	6.5	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorobutanoic acid (PFBA)	NG/L	6.6 J	18 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 UJ		
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 UJ	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	3 J	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 UJ		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.6 J	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 UJ		
		Perfluorohexanoic acid (PFHxA)	NG/L	14.6	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 UJ		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 UJ		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.6 J	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorooctanoic acid (PFOA)	NG/L	1.5 J	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 UJ		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluoropentanoic acid (PFPeA)	NG/L	9.7	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	10.8 J		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 UJ	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 UJ	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	8.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U		

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Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FC165													
			Location	GC_BW002S		NP_BW001D		NP_BW001S		NP_OW001		OW17003		OW24001			
			Sample Date	10/25/2022		10/27/2022		10/27/2022		10/27/2022		10/27/2022		10/26/2022			
			Sample ID	LORNG_GC_BW002S_10252022		LORNG_NP-BW001D_10272022		LORNG_NP-BW001S_10272022		LORNG_NP-OW001_10272022		LORNG_OW17003_10272022		LORNG_OW24001_10262022			
			QC Code	N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	UJ	3.6	UJ	3.6	UJ	3.6	U	3.7	U	3.6	U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	UJ	8.6		7.1		3.6	U	11.9		3.6	U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.7	U	3.6	U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.7	U	3.6	U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18	R	3.6	R	18	R	18	R	3.7	R	18	UJ		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.7	U	3.6	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.1	J		
		Perfluorobutanoic acid (PFBA)	NG/L	3.6	UJ	3.6	UJ	3.6	UJ	3.6	U	7.2	J	8.4			
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	UJ	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	UJ	1.8	UJ	1.8	UJ	1.8	U	1.1	J	7.9			
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	UJ	1.8	UJ	1.1	J	0.89	J	1.9	U	12.5			
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	UJ	1.8	UJ	1.8	UJ	1.8	U	15.2		10.6			
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluorononanoic acid (PFNA)	NG/L	1.8	UJ	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	8.9	UJ	1.8	R	1.8	UJ	1.8	UJ	1.9	U	1.8	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.8	U	1.8	U	0.91	J	1.9	U	9.9			
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	UJ	1.8	UJ	1.8	UJ	1.8	U	1.9	U	4.2			
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	0.92	J		
		Perfluoropentanoic acid (PFPeA)	NG/L	14.8	J	15.3	J	12.3	J	1.8	U	4.1		18.7			
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	UJ	1.8	U	1.8	UJ	1.8	U	1.9	UJ	1.8	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	UJ	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.8	U		

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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-64869				200-64993							200-64994				200-65216				200-65217	
			Location	BW05007		SB/OW12001		BW06005		MMW0124				OW21005	JMW8011		OW16001		JBW7338B		JBW7737B		BW12006		JBW7339B	
			Sample Date	9/7/2022		9/1/2022		9/14/2022		9/13/2022				9/14/2022	9/17/2022		9/18/2022		9/27/2022		9/28/2022		10/1/2022		10/1/2022	
			Sample ID	LORNG_BW05007_09072022_E		LORNG_OW12001_09012022_E		LORNG_BW06005_09142022_E		LORNG_MMW0124_09132022_E		LORNG_MMW0124_09132022FD_E		LORNG_OW21005_09142022_E	LORNG_JMW8011_09172022_E		LORNG_OW16001_09182022_E		LORNG_JBW7338B_09272022_E		LORNG_JBW7737B_09282022_E		LORNG_BW12006_10012022_E		LORNG_JBW7339B_10012022_E	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L																						
		1,1,1-TRICHLOROETHANE	UG/L																						
		1,1,2,2-TETRACHLOROETHANE	UG/L																						
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L																						
		1,1,2-TRICHLOROETHANE	UG/L																						
		1,1-DICHLOROETHANE	UG/L																						
		1,1-DICHLOROETHENE	UG/L																						
		1,1-DICHLOROPROPENE	UG/L																						
		1,2,3-TRICHLOROBENZENE	UG/L																						
		1,2,3-TRICHLOROPROPANE	UG/L																						
		1,2,4-TRICHLOROBENZENE	UG/L																						
		1,2,4-TRIMETHYLBENZENE	UG/L																						
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L																						
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L																						
		1,2-DICHLOROBENZENE	UG/L																						
		1,2-DICHLOROETHANE	UG/L																						
		1,2-DICHLOROPROPANE	UG/L																						
		1,3,5-TRICHLOROBENZENE	UG/L																						
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L																						
		1,3-DICHLOROBENZENE	UG/L																						
		1,3-DICHLOROPROPANE	UG/L																						
		1,4-DICHLOROBENZENE	UG/L																						
		2,2-DICHLOROPROPANE	UG/L																						
		2-CHLOROTOLUENE	UG/L																						
		2-HEXANONE	UG/L																						
		4-CHLOROTOLUENE	UG/L																						
		ACETONE	UG/L																						
		BENZENE	UG/L																						
		BROMOBENZENE	UG/L																						
		BROMOCHLOROMETHANE	UG/L																						
		BROMODICHLOROMETHANE	UG/L																						
		BROMOFORM	UG/L																						
		BROMOMETHANE	UG/L																						
		CARBON DISULFIDE	UG/L																						
		CARBON TETRACHLORIDE	UG/L																						
		CHLOROBENZENE	UG/L																						
		CHLOROETHANE	UG/L																						
		CHLOROFORM	UG/L																						
		CHLOROMETHANE	UG/L																						
		CIS-1,2-DICHLOROETHYLENE	UG/L																						
		CIS-1,3-DICHLOROPROPENE	UG/L																						
		CYCLOHEXANE	UG/L																						
		DIBROMOCHLOROMETHANE	UG/L																						
		DIBROMOMETHANE	UG/L																						
		DICHLORODIFLUOROMETHANE	UG/L																						
		ETHYLBENZENE	UG/L																						

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-64869		200-64993					200-64994		200-65216		200-65217	
			Location	BW05007	SB/OW12001	BW06005	MMW0124		OW21005		JMW8011	OW16001	JBW7338B	JBW7737B	BW12006	JBW7339B
			Sample Date	9/7/2022	9/1/2022	9/14/2022	9/13/2022		9/14/2022		9/17/2022	9/18/2022	9/27/2022	9/28/2022	10/1/2022	10/1/2022
			Sample ID	LORNG_BW05007_09072022_E	LORNG_OW12001_09012022_E	LORNG_BW06005_09142022_E	LORNG_MMW0124_09132022_E	LORNG_MMW0124_09132022FD_E	LORNG_OW21005_09142022_E		LORNG_JMW8011_09172022_E	LORNG_OW16001_09182022_E	LORNG_JBW7338B_09272022_E	LORNG_JBW7737B_09282022_E	LORNG_BW12006_10012022_E	LORNG_JBW7339B_10012022_E
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	HEXACHLOROBUTADIENE	UG/L													
		IODOMETHANE (METHYL IODIDE)	UG/L													
		ISOPROPYLBENZENE (CUMENE)	UG/L													
		M,P-XYLENE (SUM OF ISOMERS)	UG/L													
		METHYL ACETATE	UG/L													
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L													
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L													
		METHYLCYCLOHEXANE	UG/L													
		METHYLENE CHLORIDE	UG/L													
		NAPHTHALENE	UG/L													
		N-BUTYLBENZENE	UG/L													
		N-PROPYLBENZENE	UG/L													
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L													
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L													
		SEC-BUTYLBENZENE	UG/L													
		STYRENE	UG/L													
		T-BUTYLBENZENE	UG/L													
		TERT-BUTYL METHYL ETHER	UG/L													
		TETRACHLOROETHYLENE(PCE)	UG/L													
		TOLUENE	UG/L													
		TRANS-1,2-DICHLOROETHENE	UG/L													
		TRANS-1,3-DICHLOROPROPENE	UG/L													
		TRICHLOROETHYLENE (TCE)	UG/L													
		TRICHLOROFLUOROMETHANE	UG/L													
		VINYL ACETATE	UG/L													
		VINYL CHLORIDE	UG/L													
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L													
		2-METHYLNAPHTHALENE	UG/L													
		ACENAPHTHENE	UG/L													
		ACENAPHTHYLENE	UG/L													
		ANTHRACENE	UG/L													
		BENZO(A)ANTHRACENE	UG/L													
		BENZO(A)PYRENE	UG/L													
		BENZO(B)FLUORANTHENE	UG/L													
		BENZO(G,H,I)PERYLENE	UG/L													
		BENZO(K)FLUORANTHENE	UG/L													
		CHRYSENE	UG/L													
		DIBENZ(A,H)ANTHRACENE	UG/L													
		FLUORANTHENE	UG/L													
		FLUORENE	UG/L													
		INDENO(1,2,3-C,D)PYRENE	UG/L													
		NAPHTHALENE	UG/L													
		PENTACHLOROPHENOL	UG/L													
		PHENANTHRENE	UG/L													
		PYRENE	UG/L													

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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-64869		200-64993					200-64994		200-65216		200-65217	
			Location	BW05007	SB/OW12001	BW06005	MMW0124			OW21005	JMW8011	OW16001	JBW7338B	JBW7737B	BW12006	JBW7339B
			Sample Date	9/7/2022	9/1/2022	9/14/2022	9/13/2022			9/14/2022	9/17/2022	9/18/2022	9/27/2022	9/28/2022	10/1/2022	10/1/2022
			Sample ID	LORNG_BW05007_09072022_E	LORNG_OW12001_09012022_E	LORNG_BW06005_09142022_E	LORNG_MMW0124_09132022_E		LORNG_MMW0124_09132022FD_E	LORNG_OW21005_09142022_E	LORNG_JMW8011_09172022_E	LORNG_OW16001_09182022_E	LORNG_JBW7338B_09272022_E	LORNG_JBW7737B_09282022_E	LORNG_BW12006_10012022_E	LORNG_JBW7339B_10012022_E
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L																		
		1,2-DICHLOROBENZENE	UG/L																		
		1,2-DIPHENYLHYDRAZINE	UG/L																		
		1,3-DICHLOROBENZENE	UG/L																		
		1,4-DICHLOROBENZENE	UG/L																		
		1-METHYLNAPHTHALENE	UG/L																		
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L																		
		2,3,4,6-TETRACHLOROPHENOL	UG/L																		
		2,4,5-TRICHLOROPHENOL	UG/L																		
		2,4,6-TRICHLOROPHENOL	UG/L																		
		2,4-DICHLOROPHENOL	UG/L																		
		2,4-DIMETHYLPHENOL	UG/L																		
		2,4-DINITROPHENOL	UG/L																		
		2,4-DINITROTOLUENE	UG/L																		
		2,6-DINITROTOLUENE	UG/L																		
		2-CHLORONAPHTHALENE	UG/L																		
		2-CHLOROPHENOL	UG/L																		
		2-METHYLPHENOL (O-CRESOL)	UG/L																		
		2-NITROANILINE	UG/L																		
		2-NITROPHENOL	UG/L																		
		3,3'-DICHLOROBENZIDINE	UG/L																		
		3-NITROANILINE	UG/L																		
		4,6-DINITRO-2-METHYLPHENOL	UG/L																		
		4-BROMOPHENYL PHENYL ETHER	UG/L																		
		4-CHLORO-3-METHYLPHENOL	UG/L																		
		4-CHLOROANILINE	UG/L																		
		4-CHLOROPHENYL PHENYL ETHER	UG/L																		
		4-NITROANILINE	UG/L																		
		4-NITROPHENOL	UG/L																		
		ANTHRACENE	UG/L																		
		BENZALDEHYDE	UG/L																		
		BENZIDINE	UG/L																		
		BENZOIC ACID	UG/L																		
		BENZYL ALCOHOL	UG/L																		
		BENZYL BUTYL PHTHALATE	UG/L																		
		BIPHENYL (DIPHENYL)	UG/L																		
		BIS(2-CHLOROETHOXY) METHANE	UG/L																		
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L																		
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L																		
		CARBAZOLE	UG/L																		
		CRESOLS, M & P	UG/L																		
		DIETHYL PHTHALATE	UG/L																		
		DIMETHYL PHTHALATE	UG/L																		
		DI-N-BUTYL PHTHALATE	UG/L																		
		DI-N-OCTYLPHTHALATE	UG/L																		

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Former Loring Air Force Base, Limestone, Maine

			SDG	200-64869		200-64993					200-64994		200-65216		200-65217	
			Location	BW05007	SB/OW12001	BW06005	MMW0124			OW21005	JMW8011	OW16001	JBW7338B	JBW7737B	BW12006	JBW7339B
			Sample Date	9/7/2022	9/1/2022	9/14/2022	9/13/2022			9/14/2022	9/17/2022	9/18/2022	9/27/2022	9/28/2022	10/1/2022	10/1/2022
			Sample ID	LORNG_BW05007_09072022_E	LORNG_OW12001_09012022_E	LORNG_BW06005_09142022_E	LORNG_MMW0124_09132022_E		LORNG_MMW0124_09132022FD_E	LORNG_OW21005_09142022_E	LORNG_JMW8011_09172022_E	LORNG_OW16001_09182022_E	LORNG_JBW7338B_09272022_E	LORNG_JBW7737B_09282022_E	LORNG_BW12006_10012022_E	LORNG_JBW7339B_10012022_E
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		HEXACHLOROBENZENE	UG/L																		
SVOCs	T	HEXACHLOROBUTADIENE	UG/L																		
		HEXACHLOROCYCLOPENTADIENE	UG/L																		
		HEXACHLOROETHANE	UG/L																		
		ISOPHORONE	UG/L																		
		NITROBENZENE	UG/L																		
		N-NITROSODIMETHYLAMINE	UG/L																		
		N-NITROSODI-N-PROPYLAMINE	UG/L																		
		N-NITROSODIPHENYLAMINE	UG/L																		
		PHENOL	UG/L																		
		PYRIDINE	UG/L																		
PCBs	T	PCB, TOTAL	UG/L																		
		PCB-1016 (AROCLOR 1016)	UG/L																		
		PCB-1221 (AROCLOR 1221)	UG/L																		
		PCB-1232 (AROCLOR 1232)	UG/L																		
		PCB-1242 (AROCLOR 1242)	UG/L																		
		PCB-1248 (AROCLOR 1248)	UG/L																		
		PCB-1254 (AROCLOR 1254)	UG/L																		
		PCB-1260 (AROCLOR 1260)	UG/L																		
		PCB-1262 (AROCLOR 1262)	UG/L																		
		PCB-1268 (AROCLOR 1268)	UG/L																		
Pesticides	T	ALDRIN	UG/L																		
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L																		
		ALPHA ENDOSULFAN	UG/L																		
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L																		
		BETA ENDOSULFAN	UG/L																		
		CIS-CHLORDANE	UG/L																		
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L																		
		DIELDRIN	UG/L																		
		ENDOSULFAN SULFATE	UG/L																		
		ENDRIN	UG/L																		
		ENDRIN ALDEHYDE	UG/L																		
		ENDRIN KETONE	UG/L																		
		GAMMA BHC (LINDANE)	UG/L																		
		GAMMA-CHLORDANE	UG/L																		
		HEPTACHLOR	UG/L																		
		HEPTACHLOR EPOXIDE	UG/L																		
		METHOXYCHLOR	UG/L																		
		P,P'-DDD	UG/L																		
		P,P'-DDE	UG/L																		
		P,P'-DDT	UG/L																		
		TOXAPHENE	UG/L																		

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Former Loring Air Force Base, Limestone, Maine

			SDG	200-64869		200-64993					200-64994		200-65216		200-65217	
			Location	BW05007	SB/OW12001	BW06005	MMW0124		OW21005		JMW8011	OW16001	JBW7338B	JBW7737B	BW12006	JBW7339B
			Sample Date	9/7/2022	9/1/2022	9/14/2022	9/13/2022		9/14/2022		9/17/2022	9/18/2022	9/27/2022	9/28/2022	10/1/2022	10/1/2022
			Sample ID	LORNG_BW05007_09072022_E	LORNG_OW12001_09012022_E	LORNG_BW06005_09142022_E	LORNG_MMW0124_09132022_E	LORNG_MMW0124_09132022FD_E	LORNG_OW21005_09142022_E		LORNG_JMW8011_09172022_E	LORNG_OW16001_09182022_E	LORNG_JBW7338B_09272022_E	LORNG_JBW7737B_09282022_E	LORNG_BW12006_10012022_E	LORNG_JBW7339B_10012022_E
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	T	ALUMINUM	UG/L																		
		ANTIMONY	UG/L																		
		ARSENIC	UG/L																		
		BARIUM	UG/L																		
		BERYLLIUM	UG/L																		
		CADMIUM	UG/L																		
		CALCIUM	UG/L																		
		CHROMIUM, TOTAL	UG/L																		
		COBALT	UG/L																		
		COPPER	UG/L																		
		IRON	UG/L																		
		LEAD	UG/L																		
		MAGNESIUM	UG/L																		
		MANGANESE	UG/L																		
		MERCURY	UG/L																		
		NICKEL	UG/L																		
		POTASSIUM	UG/L																		
		SELENIUM	UG/L																		
		SILVER	UG/L																		
		SODIUM	UG/L																		
		THALLIUM	UG/L																		
		VANADIUM	UG/L																		
		ZINC	UG/L																		
Perchlorate	T	PERCHLORATE	UG/L	0.1	U	0.13	J	0.1	U	0.1	U	0.072	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5064							SP5209					
			Location	BW05007	FIELDQC	JBW7711		JMW0445	SB/OW12001	SB/OW17001	BW06005	FIELDQC	JPZ0349	MMW0124		OW21005
			Sample Date	9/7/2022	9/1/2022	9/1/2022		8/31/2022	9/1/2022	8/31/2022	9/14/2022	9/15/2022	9/14/2022	9/13/2022		9/14/2022
			Sample ID	LORNG_BW05007_09072022_K	LORNG_TB12_08312022	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	LORNG_JMW0445_08312022_K	LORNG_OW12001_09012022_K	LORNG_OW17001_08312022_K	LORNG_BW06005_09142022_K	LORNG_TB13_09152022	LORNG_JPZ0349_09142022_K	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	LORNG_OW21005_09142022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1,1-TRICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1,2,2-TETRACHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1,2-TRICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1-DICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,1-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2,3-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2,3-TRICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2,4-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2,4-TRIMETHYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	53 J	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.024 UJ	0.024 U	0.024 UJ	0.024 UJ	0.024 UJ	0.024 UJ		0.024 UJ	0.024 U	0.024 UJ			0.024 UJ
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.024 UJ	0.024 U	0.024 UJ	0.024 UJ	0.024 UJ	0.024 UJ		0.024 UJ	0.024 U	0.024 UJ			0.024 UJ
		1,2-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2-DICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,2-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,3,5-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	20	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,3-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,3-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		1,4-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		2,2-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		2-CHLOROTOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		2-HEXANONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	2.5 U			2.5 U
		4-CHLOROTOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		ACETONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	2.5 U			2.5 U
		BENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	14	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		BROMOBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		BROMOCHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		BROMODICHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		BROMOFORM	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		BROMOMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U			1 U
		CARBON DISULFIDE	UG/L	0.5 U	0.27 J	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		CARBON TETRACHLORIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ		0.5 U	0.5 U	0.5 U			0.5 U
		CHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		CHLOROETHANE	UG/L	1 U	1 U	1 U	1 U	1 UJ	1 UJ		1 U	1 U	1 U			1 U
		CHLOROFORM	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		CHLOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U		1 U	0.95 J	1 U			1 U
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.51 J
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		CYCLOHEXANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	66 J	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		DIBROMOCHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		DIBROMOMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		DICHLORODIFLUOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U			1 U
		ETHYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	1.2	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U

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			SDG	SP5064								SP5209					
			Location	BW05007	FIELDQC	JBW7711		JMW0445	SB/OW12001	SB/OW17001	BW06005	FIELDQC	JPZ0349	MMW0124		OW21005
			Sample Date	9/7/2022	9/1/2022	9/1/2022		8/31/2022	9/1/2022	8/31/2022	9/14/2022	9/15/2022	9/14/2022	9/13/2022		9/14/2022
			Sample ID	LORNG_BW05007_09072022_K	LORNG_TB12_08312022	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	LORNG_JMW0445_08312022_K	LORNG_OW12001_09012022_K	LORNG_OW17001_08312022_K	LORNG_BW06005_09142022_K	LORNG_TB13_09152022	LORNG_JPZ0349_09142022_K	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	LORNG_OW21005_09142022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	HEXACHLOROBUTADIENE	UG/L	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U		0.75 U	0.75 U	0.75 U			0.75 U
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	7.6	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1 U	1 U	1 U	1 U	15	1 U		1 U	1 U	1 U			1 U
		METHYL ACETATE	UG/L	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U		0.75 U	0.75 U	0.75 U			0.75 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	2.5 U			2.5 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	2.5 U			2.5 U
		METHYLCYCLOHEXANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	120 J	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		METHYLENE CHLORIDE	UG/L	2.5 U	1.4 J	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	2.5 U			2.5 U
		NAPHTHALENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	5.8	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		N-BUTYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	4.4	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		N-PROPYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	10	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	3.7	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		SEC-BUTYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	3.3	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		STYRENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		T-BUTYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.53 J	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TERT-BUTYL METHYL ETHER	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TETRACHLOROETHYLENE(PCE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TRANS-1,2-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TRANS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.5 U
		TRICHLOROETHYLENE (TCE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U			0.63 J
		TRICHLOROFLUOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U			1 U
		VINYL ACETATE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ		0.5 U	0.5 U	0.5 U			0.5 U
		VINYL CHLORIDE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U			1 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L								0.47 U			0.47 U	0.47 U	
		2-METHYLNAPHTHALENE	UG/L	0.094 U		0.093 UJ		4.7 J			0.093 U		0.095 U			0.094 U
		ACENAPHTHENE	UG/L	0.094 U		0.093 UJ		0.1 J			0.093 U		0.095 U			0.094 U
		ACENAPHTHYLENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		ANTHRACENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		BENZO(A)ANTHRACENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		BENZO(A)PYRENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		BENZO(B)FLUORANTHENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		BENZO(G,H,I)PERYLENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		BENZO(K)FLUORANTHENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		CHRYSENE	UG/L	0.094 UJ		0.093 UJ		0.093 UJ			0.093 U		0.048 J			0.094 U
		DIBENZ(A,H)ANTHRACENE	UG/L	0.094 UJ		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		FLUORANTHENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		FLUORENE	UG/L	0.094 U		0.093 UJ		0.09 J			0.093 U		0.095 U			0.094 U
		INDENO(1,2,3-C,D)PYRENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		NAPHTHALENE	UG/L	0.094 U		0.093 UJ		3.2 J			0.093 U		0.095 U			0.094 U
		PENTACHLOROPHENOL	UG/L	0.47 U		0.47 UJ		0.47 UJ			0.47 U		0.48 U			0.47 U
		PHENANTHRENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U
		PYRENE	UG/L	0.094 U		0.093 UJ		0.093 UJ			0.093 U		0.095 U			0.094 U

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			SDG	SP5064								SP5209					
			Location	BW05007	FIELDQC	JBW7711		JMW0445	SB/OW12001	SB/OW17001	BW06005	FIELDQC	JPZ0349	MMW0124		OW21005
			Sample Date	9/7/2022	9/1/2022	9/1/2022		8/31/2022	9/1/2022	8/31/2022	9/14/2022	9/15/2022	9/14/2022	9/13/2022		9/14/2022
			Sample ID	LORNG_BW05007_09072022_K	LORNG_TB12_08312022	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	LORNG_JMW0445_08312022_K	LORNG_OW12001_09012022_K	LORNG_OW17001_08312022_K	LORNG_BW06005_09142022_K	LORNG_TB13_09152022	LORNG_JPZ0349_09142022_K	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	LORNG_OW21005_09142022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		1,2-DICHLOROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		1,2-DIPHENYLHYDRAZINE	UG/L	14 U		14 UJ		14 UJ			14 U		14 U			14 U
		1,3-DICHLOROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		1,4-DICHLOROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		1-METHYLNAPHTHALENE	UG/L	7.1 U		7 UJ		6 J			7 U		7.1 U			7.1 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		2,3,4,6-TETRACHLOROPHENOL	UG/L	7.1 UJ		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2,4,5-TRICHLOROPHENOL	UG/L	18 UJ		18 UJ		18 UJ			18 UJ		18 U			18 U
		2,4,6-TRICHLOROPHENOL	UG/L	7.1 UJ		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2,4-DICHLOROPHENOL	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2,4-DIMETHYLPHENOL	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2,4-DINITROPHENOL	UG/L	18 R		18 UJ		18 UJ			18 UJ		18 U			18 U
		2,4-DINITROTOLUENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		2,6-DINITROTOLUENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		2-CHLORONAPHTHALENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		2-CHLOROPHENOL	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2-METHYLPHENOL (O-CRESOL)	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		2-NITROANILINE	UG/L	18 U		18 UJ		18 UJ			18 U		18 U			18 U
		2-NITROPHENOL	UG/L	7.1 UJ		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		3,3'-DICHLOROBENZIDINE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		3-NITROANILINE	UG/L	18 U		18 UJ		18 UJ			18 U		18 U			18 U
		4,6-DINITRO-2-METHYLPHENOL	UG/L	18 R		18 UJ		18 UJ			18 UJ		18 U			18 U
		4-BROMOPHENYL PHENYL ETHER	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		4-CHLORO-3-METHYLPHENOL	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		4-CHLOROANILINE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		4-CHLOROPHENYL PHENYL ETHER	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		4-NITROANILINE	UG/L	18 U		18 UJ		18 UJ			18 U		18 U			18 U
		4-NITROPHENOL	UG/L	18 R		18 UJ		18 UJ			18 UJ		18 U			18 U
		ANTHRACENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BENZALDEHYDE	UG/L	7.1 UJ		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BENZIDINE	UG/L	35 UJ		35 UJ		35 UJ			35 U		36 U			35 U
		BENZOIC ACID	UG/L	18 R		18 UJ		18 UJ			18 UJ		18 U			18 U
		BENZYL ALCOHOL	UG/L	14 UJ		14 UJ		14 UJ			1.3 J		6.8 J			2.3 J
		BENZYL BUTYL PHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BIPHENYL (DIPHENYL)	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BIS(2-CHLOROETHOXY) METHANE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		CARBAZOLE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		CRESOLS, M & P	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		DIETHYL PHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		DIMETHYL PHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		DI-N-BUTYL PHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		DI-N-OCTYLPHTHALATE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 UJ			7.1 U

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			Location	BW05007	FIELDQC	JBW7711		JMW0445	SB/OW12001	SB/OW17001	BW06005	FIELDQC	JPZ0349	MMW0124		OW21005
			Sample Date	9/7/2022	9/1/2022	9/1/2022		8/31/2022	9/1/2022	8/31/2022	9/14/2022	9/15/2022	9/14/2022	9/13/2022		9/14/2022
			Sample ID	LORNG_BW05007_09072022_K	LORNG_TB12_08312022	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	LORNG_JMW0445_08312022_K	LORNG_OW12001_09012022_K	LORNG_OW17001_08312022_K	LORNG_BW06005_09142022_K	LORNG_TB13_09152022	LORNG_JPZ0349_09142022_K	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	LORNG_OW21005_09142022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		HEXACHLOROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
SVOCs	T	HEXACHLOROBUTADIENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		HEXACHLOROCYCLOPENTADIENE	UG/L	7.1 UJ		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		HEXACHLOROETHANE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		ISOPHORONE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		NITROBENZENE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		N-NITROSODIMETHYLAMINE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		N-NITROSODI-N-PROPYLAMINE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		N-NITROSODIPHENYLAMINE	UG/L	7.1 U		7 UJ		7 UJ			7 U		7.1 U			7.1 U
		PHENOL	UG/L	7.1 U		7 UJ		7 UJ			7 UJ		7.1 U			7.1 U
		PYRIDINE	UG/L	35 U		35 UJ		35 UJ			35 U		36 U			35 U
PCBs	T	PCB, TOTAL	UG/L	0.21 U									0.21 U			0.21 U
		PCB-1016 (AROCLOR 1016)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1221 (AROCLOR 1221)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1232 (AROCLOR 1232)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1242 (AROCLOR 1242)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1248 (AROCLOR 1248)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1254 (AROCLOR 1254)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1260 (AROCLOR 1260)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1262 (AROCLOR 1262)	UG/L	0.024 U									0.024 U			0.023 U
		PCB-1268 (AROCLOR 1268)	UG/L	0.024 U									0.024 U			0.023 U
Pesticides	T	ALDRIN	UG/L	0.023 UJ												
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L	0.023 UJ												
		ALPHA ENDOSULFAN	UG/L	0.023 UJ												
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L	0.023 UJ												
		BETA ENDOSULFAN	UG/L	0.047 UJ												
		CIS-CHLORDANE	UG/L	0.023 UJ												
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L	0.023 UJ												
		DIELDRIN	UG/L	0.047 UJ												
		ENDOSULFAN SULFATE	UG/L	0.047 UJ												
		ENDRIN	UG/L	0.047 UJ												
		ENDRIN ALDEHYDE	UG/L	0.047 UJ												
		ENDRIN KETONE	UG/L	0.047 UJ												
		GAMMA BHC (LINDANE)	UG/L	0.023 UJ												
		GAMMA-CHLORDANE	UG/L	0.023 UJ												
		HEPTACHLOR	UG/L	0.023 UJ												
		HEPTACHLOR EPOXIDE	UG/L	0.023 UJ												
		METHOXYCHLOR	UG/L	0.23 UJ												
		P,P'-DDD	UG/L	0.047 UJ												
		P,P'-DDE	UG/L	0.047 UJ												
		P,P'-DDT	UG/L	0.047 UJ												
		TOXAPHENE	UG/L	0.47 UJ												

Prepared by: AKN
Date: 12/97/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5064								SP5209					
			Location	BW05007	FIELDQC	JBW7711		JMW0445	SB/OW12001	SB/OW17001	BW06005	FIELDQC	JPZ0349	MMW0124		OW21005
			Sample Date	9/7/2022	9/1/2022	9/1/2022		8/31/2022	9/1/2022	8/31/2022	9/14/2022	9/15/2022	9/14/2022	9/13/2022		9/14/2022
			Sample ID	LORNG_BW05007_09072022_K	LORNG_TB12_08312022	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	LORNG_JMW0445_08312022_K	LORNG_OW12001_09012022_K	LORNG_OW17001_08312022_K	LORNG_BW06005_09142022_K	LORNG_TB13_09152022	LORNG_JPZ0349_09142022_K	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	LORNG_OW21005_09142022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	T	ALUMINUM	UG/L	174 J		267 J		226 J		100 J	156 J		153 J			171 J
		ANTIMONY	UG/L	0.5 U		0.5 U		0.5 U		0.5 U	0.19 J		0.069 J			0.077 J
		ARSENIC	UG/L	4 U		4 U		4 U		4 U	4 U		4 U			4 U
		BARIUM	UG/L	181		62.7		44.8		38	43.3		29.1			47.8
		BERYLLIUM	UG/L	0.5 U		0.5 U		0.5 U		0.5 U	0.5 U		0.5 U			0.5 U
		CADMIUM	UG/L	3 U		3 U		3 U		3 U	3 U		3 U			3 U
		CALCIUM	UG/L	120,000		81,500		146,000		58,500	55,800		89,600			115,000
		CHROMIUM, TOTAL	UG/L	3.5 J		2 J		4 U		0.63 J	1.2 J		0.93 J			0.52 J
		COBALT	UG/L	4 U		0.66 J		4 U		4 U	4 U		4 U			4 U
		COPPER	UG/L	1.4 J		0.8 J		1.4 J		10 U	10 U		0.79 J			0.84 J
		IRON	UG/L	80 U		5,440		208		22 J	45 J		14 J			972
		LEAD	UG/L	0.5 U		0.078 J		0.5 U		0.5 U	0.22 J		0.5 U			0.868 J
		MAGNESIUM	UG/L	52,700		9,910		18,900		8,560	19,400		14,300			8,900
		MANGANESE	UG/L	4 U		108		115		3.7 J	4.7 J		95.9			483
		MERCURY	UG/L	0.1 U		0.1 U		0.1 U		0.1 U	0.012 J		0.012 J			0.016 J
		NICKEL	UG/L	2 J		1.1 J		0.35 J		0.3 J	4 U		4 U			4 U
		POTASSIUM	UG/L	2,140		1,580		1,140		2,440	4,940		937 J			1,160
		SELENIUM	UG/L	0.24 J		0.19 J		3 U		0.27 J	3 U		0.24 J			3 U
		SILVER	UG/L	0.4 U		0.4 U		0.4 U		0.4 U	0.4 U		0.4 U			0.4 U
		SODIUM	UG/L	103,000		3,530		9,930		76,800	8,370		18,600			18,500
		THALLIUM	UG/L	0.4 U		0.4 U		0.4 U		0.4 U	0.4 U		0.4 U			0.4 U
		VANADIUM	UG/L	4 U		4 U		4 U		4 U	0.52 J		4 U			0.31 J
		ZINC	UG/L	0.91 J		2.2 J		0.76 J		12.5 J	10 U		10 U			10 U
Perchlorate	T	PERCHLORATE	UG/L													

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

Prepared by: AKN
Date: 12/97/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP5253				SP5278				SP5537							
		Location	JMW8011		OW16001		OW24001		AA07MW-01		FIELDQC		JMW0683		FIELDQC		JBW7338B	
		Sample Date	9/17/2022		9/18/2022		9/18/2022		9/20/2022		9/20/2022		9/19/2022		9/30/2022		9/27/2022	
		Sample ID	LORNG_JMW8011_09172022_K		LORNG_OW16001_09182022_K		LORNG_OW24001_09182022_K		LORNG_AA07MW01_09202022_K		LORNG_TB14_09202022		LORNG_JMW0683_09192022_K		LORNG_TB15_09302022		LORNG_JBW7338B_09272022_K	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,1-TRICHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2,2-TETRACHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROETHENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.3	
		1,1-DICHLOROPROPENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROPROPANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRIMETHYLBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	27		0.5	U	0.5	U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L			0.023	U	0.024	U	0.024	U	0.023	U	0.024	U	0.024	U	0.024	R
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L			0.023	U	0.024	U	0.024	U	0.023	U	0.024	U	0.024	U	0.024	R
		1,2-DICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROPROPANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROPROPANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,4-DICHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2,2-DICHLOROPROPANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2-CHLOROTOLUENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2-HEXANONE	UG/L			2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		4-CHLOROTOLUENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		ACETONE	UG/L			2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		BENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	9.7		0.5	U	0.5	U
		BROMOBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOCHLOROMETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMODICHLOROMETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOFORM	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOMETHANE	UG/L			1	U	1	U	1	U	1	U	1	U	1	U	1	U
		CARBON DISULFIDE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CARBON TETRACHLORIDE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROETHANE	UG/L			1	U	1	U	1	U	1	U	1	U	1	U	1	U
		CHLOROFORM	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROMETHANE	UG/L			1	U	1	U	1	U	1	J	1	U	1	U	1	U
		CIS-1,2-DICHLOROETHYLENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	7	
		CIS-1,3-DICHLOROPROPENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CYCLOHEXANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	39		0.5	U	1	
		DIBROMOCHLOROMETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOMETHANE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DICHLORODIFLUOROMETHANE	UG/L			1	U	1	U	1	U	1	U	1	U	1	U	1	U
		ETHYLBENZENE	UG/L			0.5	U	0.5	U	0.5	U	0.5	U	0.21	J	0.5	U	0.5	U

		SDG	SP5537							
		Location	JBW7348				JBW7737B			
		Sample Date	9/28/2022				9/28/2022			
		Sample ID	LORNG_JBW7348_09282022_K		LORNG_JBW7348_09282022FD_K		LORNG_JBW7737B_09282022_K		LORNG_JBW7737B_09282022FD_K	
Class	Fraction	Analyte Name	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,1-TRICHLOROETHANE	26	J	0.5	U	0.5	U	0.5	U
		1,1,2,2-TETRACHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROETHANE	1.4	J	1.3		0.5	U	0.5	U
		1,1-DICHLOROETHENE	3.5	J	2.8		0.5	U	0.5	U
		1,1-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRIMETHYLBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	U	0.024	U	0.024	U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	U	0.024	U	0.024	U
		1,2-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U
		1,4-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		2,2-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U
		2-CHLOROTOLUENE	0.5	U	0.5	U	0.5	U	0.5	U
		2-HEXANONE	2.5	U	2.5	U	2.5	U	2.5	U
		4-CHLOROTOLUENE	0.5	U	0.5	U	0.5	U	0.5	U
		ACETONE	2.5	U	2.5	U	2.5	U	2.5	U
		BENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOCHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		BROMODICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOFORM	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOMETHANE	1	U	1	U	1	U	1	U
		CARBON DISULFIDE	0.5	U	0.5	U	0.5	U	0.5	U
		CARBON TETRACHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROETHANE	1	U	1	U	1	U	1	U
		CHLOROFORM	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROMETHANE	1	U	1	U	1	U	1	U
		CIS-1,2-DICHLOROETHYLENE	59	J	63		0.27	J	0.5	U
		CIS-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U
		CYCLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOCHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
		DICHLORODIFLUOROMETHANE	1	U	1	U	1	U	1	U
		ETHYLBENZENE	0.5	U	0.5	U	0.5	U	0.5	U

Prepared by: AKN
Date: 12/97/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5253				SP5278			SP5537					
			Location	JMW8011	OW16001	OW24001	AA07MW-01	FIELDQC	JMW0683	FIELDQC	JBW7338B	JBW7348		JBW7737B	
			Sample Date	9/17/2022	9/18/2022	9/18/2022	9/20/2022	9/20/2022	9/19/2022	9/30/2022	9/27/2022	9/28/2022		9/28/2022	
			Sample ID	LORNG_JMW8011_09172022_K	LORNG_OW16001_09182022_K	LORNG_OW24001_09182022_K	LORNG_AA07MW01_09202022_K	LORNG_TB14_09202022	LORNG_JMW0683_09192022_K	LORNG_TB15_09302022	LORNG_JBW7338B_09272022_K	LORNG_JBW7348_09282022_K	LORNG_JBW7348_09282022FD_K	LORNG_JBW7737B_09282022_K	LORNG_JBW7737B_09282022FD_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	HEXACHLOROBUTADIENE	UG/L		0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
		IODOMETHANE (METHYL IODIDE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UL	0.5 U	0.5 U
		ISOPROPYLBENZENE (CUMENE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	7.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		METHYL ACETATE	UG/L		0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L		2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L		2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		METHYLCYCLOHEXANE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	93	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		METHYLENE CHLORIDE	UG/L		2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		NAPHTHALENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	2.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		N-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		N-PROPYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	7.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	2.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		SEC-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	3.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		STYRENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		T-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.76 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		TERT-BUTYL METHYL ETHER	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		TETRACHLOROETHYLENE(PCE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 J	0.5 U	0.5 U
		TOLUENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		TRANS-1,2-DICHLOROETHENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3	0.96 J	1.1	0.5 U	0.5 U
		TRANS-1,3-DICHLOROPROPENE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		TRICHLOROETHYLENE (TCE)	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	280	270	0.5 U	0.5 U
		TRICHLOROFLUOROMETHANE	UG/L		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		VINYL ACETATE	UG/L		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		VINYL CHLORIDE	UG/L		1 U	1 U	1 U	1 U	1 U	1 U	73	1.2 J	0.61 J	1 U	1 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L	0.47 U			0.47 U				0.48 ULL	0.47 ULL			
		2-METHYLNAPHTHALENE	UG/L		0.094 U	0.093 U	0.093 U		4.5		0.096 U	0.094 U			
		ACENAPHTHENE	UG/L		0.094 U	0.093 U	0.093 U		0.62		0.096 U	0.094 U			
		ACENAPHTHYLENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		ANTHRACENE	UG/L		0.094 U	0.093 U	0.093 U		0.078 J		0.096 U	0.094 U			
		BENZO(A)ANTHRACENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		BENZO(A)PYRENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		BENZO(B)FLUORANTHENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		BENZO(G,H,I)PERYLENE	UG/L		0.075 J	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		BENZO(K)FLUORANTHENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		CHRYSENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		DIBENZ(A,H)ANTHRACENE	UG/L		0.094 U	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		FLUORANTHENE	UG/L		0.094 U	0.093 U	0.093 U		0.14 J		0.096 U	0.094 U			
		FLUORENE	UG/L		0.094 U	0.093 U	0.093 U		0.58		0.096 U	0.094 U			
		INDENO(1,2,3-C,D)PYRENE	UG/L		0.066 J	0.093 U	0.093 U		0.093 U		0.096 U	0.094 U			
		NAPHTHALENE	UG/L		0.094 U	0.093 U	0.093 U		1.9		0.096 U	0.094 U			
		PENTACHLOROPHENOL	UG/L		0.47 UJ	0.47 UJ	0.47 R		0.47 R		0.48 U	0.47 U			
		PHENANTHRENE	UG/L		0.094 U	0.093 U	0.093 U		0.7		0.096 U	0.094 U			
		PYRENE	UG/L		0.094 U	0.093 U	0.093 U		0.12 J		0.096 U	0.094 U			

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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5253				SP5278				SP5537							
			Location	JMW8011		OW16001		OW24001		AA07MW-01		FIELDQC		JMW0683		FIELDQC		JBW7338B	
			Sample Date	9/17/2022		9/18/2022		9/18/2022		9/20/2022		9/20/2022		9/19/2022		9/30/2022		9/27/2022	
			Sample ID	LORNG_JMW8011_09172022_K		LORNG_OW16001_09182022_K		LORNG_OW24001_09182022_K		LORNG_AA07MW01_09202022_K		LORNG_TB14_09202022		LORNG_JMW0683_09192022_K		LORNG_TB15_09302022		LORNG_JBW7338B_09272022_K	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		1,2,4-TRICHLOROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		1,2-DICHLOROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		1,2-DIPHENYLHYDRAZINE	UG/L			14	U	14	U	14	U			14	U			14	U
		1,3-DICHLOROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		1,4-DICHLOROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		1-METHYLNAPHTHALENE	UG/L			7.1	U	7	U	7	U			6.5	J			7.2	U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2,3,4,6-TETRACHLOROPHENOL	UG/L			7.1	UJ	7	UJ	7	R			7	R			7.2	UJ
		2,4,5-TRICHLOROPHENOL	UG/L			18	UJ	18	UJ	18	UJ			18	UJ			18	UJ
		2,4,6-TRICHLOROPHENOL	UG/L			7.1	UJ	7	UJ	7	UJ			7	UJ			7.2	UJ
		2,4-DICHLOROPHENOL	UG/L			7.1	UJ	7	UJ	7	UJ			7	UJ			7.2	R
		2,4-DIMETHYLPHENOL	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2,4-DINITROPHENOL	UG/L			18	UJ	18	UJ	18	R			18	R			18	U
		2,4-DINITROTOLUENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2,6-DINITROTOLUENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2-CHLORONAPHTHALENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2-CHLOROPHENOL	UG/L			7.1	R	7	R	7	UJ			7	UJ			7.2	R
		2-METHYLPHENOL (O-CRESOL)	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		2-NITROANILINE	UG/L			18	U	18	U	18	U			18	U			18	U
		2-NITROPHENOL	UG/L			7.1	UJ	7	UJ	7	UJ			7	UJ			7.2	R
		3,3'-DICHLOROBENZIDINE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		3-NITROANILINE	UG/L			18	U	18	U	18	U			18	U			18	U
		4,6-DINITRO-2-METHYLPHENOL	UG/L			18	UJ	18	UJ	18	R			18	R			18	U
SVOCs	T	4-BROMOPHENYL PHENYL ETHER	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		4-CHLORO-3-METHYLPHENOL	UG/L			7.1	U	7	U	7	U			7	U			7.2	UJ
		4-CHLOROANILINE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		4-CHLOROPHENYL PHENYL ETHER	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		4-NITROANILINE	UG/L			18	U	18	U	18	U			18	U			18	U
		4-NITROPHENOL	UG/L			18	U	18	U	18	R			18	R			18	UL
		ANTHRACENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		BENZALDEHYDE	UG/L			7.1	U	7	U	7	U			7	U			7.2	ULL
		BENZIDINE	UG/L			35	U	35	U	35	R			35	R			36	U
		BENZOIC ACID	UG/L			18	R	18	R	18	R			18	R			18	U
		BENZYL ALCOHOL	UG/L			14	U	6.7	J	14	U			14	U			14	UL
		BENZYL BUTYL PHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		BIPHENYL (DIPHENYL)	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		BIS(2-CHLOROETHOXY) METHANE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		CARBAZOLE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		CRESOLS, M & P	UG/L			7.1	U	7	U	7	U			7	U			7.2	UJ
		DIETHYL PHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		DIMETHYL PHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		DI-N-BUTYL PHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		DI-N-OCTYLPHTHALATE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U

			SDG	SP5537							
			Location	JBW7348				JBW7737B			
			Sample Date	9/28/2022				9/28/2022			
			Sample ID	LORNG_JBW7348_09282022_K		LORNG_JBW7348_09282022FD_K		LORNG_JBW7737B_09282022_K		LORNG_JBW7737B_09282022FD_K	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		1,2,4-TRICHLOROBENZENE	UG/L	7.1	U						
		1,2-DICHLOROBENZENE	UG/L	7.1	U						
		1,2-DIPHENYLHYDRAZINE	UG/L	14	U						
		1,3-DICHLOROBENZENE	UG/L	7.1	U						
		1,4-DICHLOROBENZENE	UG/L	7.1	U						
		1-METHYLNAPHTHALENE	UG/L	7.1	U						
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L	7.1	U						
		2,3,4,6-TETRACHLOROPHENOL	UG/L	7.1	UJ						
		2,4,5-TRICHLOROPHENOL	UG/L	18	UJ						
		2,4,6-TRICHLOROPHENOL	UG/L	7.1	UJ						
		2,4-DICHLOROPHENOL	UG/L	7.1	R						
		2,4-DIMETHYLPHENOL	UG/L	7.1	U						
		2,4-DINITROPHENOL	UG/L	18	U						
		2,4-DINITROTOLUENE	UG/L	7.1	U						
		2,6-DINITROTOLUENE	UG/L	7.1	U						
		2-CHLORONAPHTHALENE	UG/L	7.1	U						
		2-CHLOROPHENOL	UG/L	7.1	R						
		2-METHYLPHENOL (O-CRESOL)	UG/L	7.1	U						
		2-NITROANILINE	UG/L	18	U						
		2-NITROPHENOL	UG/L	7.1	R						
		3,3'-DICHLOROBENZIDINE	UG/L	7.1	U						
		3-NITROANILINE	UG/L	18	U						
		4,6-DINITRO-2-METHYLPHENOL	UG/L	18	U						
SVOCs	T	4-BROMOPHENYL PHENYL ETHER	UG/L	7.1	U						
		4-CHLORO-3-METHYLPHENOL	UG/L	7.1	UJ						
		4-CHLOROANILINE	UG/L	7.1	U						
		4-CHLOROPHENYL PHENYL ETHER	UG/L	7.1	U						
		4-NITROANILINE	UG/L	18	U						
		4-NITROPHENOL	UG/L	18	UL						
		ANTHRACENE	UG/L	7.1	U						
		BENZALDEHYDE	UG/L	7.1	ULL						
		BENZIDINE	UG/L	35	U						
		BENZOIC ACID	UG/L	18	U						
		BENZYL ALCOHOL	UG/L	14	UL						
		BENZYL BUTYL PHTHALATE	UG/L	7.1	U						
		BIPHENYL (DIPHENYL)	UG/L	7.1	U						
		BIS(2-CHLOROETHOXY) METHANE	UG/L	7.1	U						
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L	7.1	U						
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L	7.1	U						
		CARBAZOLE	UG/L	7.1	U						
		CRESOLS, M & P	UG/L	7.1	UJ						
		DIETHYL PHTHALATE	UG/L	7.1	U						
		DIMETHYL PHTHALATE	UG/L	7.1	U						
		DI-N-BUTYL PHTHALATE	UG/L	7.1	U						
		DI-N-OCTYLPHTHALATE	UG/L	7.1	U						

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			SDG	SP5253				SP5278				SP5537							
			Location	JMW8011		OW16001		OW24001		AA07MW-01		FIELDQC		JMW0683		FIELDQC		JBW7338B	
			Sample Date	9/17/2022		9/18/2022		9/18/2022		9/20/2022		9/20/2022		9/19/2022		9/30/2022		9/27/2022	
			Sample ID	LORNG_JMW8011_09172022_K		LORNG_OW16001_09182022_K		LORNG_OW24001_09182022_K		LORNG_AA07MW01_09202022_K		LORNG_TB14_09202022		LORNG_JMW0683_09192022_K		LORNG_TB15_09302022		LORNG_JBW7338B_09272022_K	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		HEXACHLOROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
SVOCs	T	HEXACHLOROBUTADIENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		HEXACHLOROCYCLOPENTADIENE	UG/L			7.1	UJ	7	UJ	7	U			7	U			7.2	U
		HEXACHLOROETHANE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		ISOPHORONE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		NITROBENZENE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		N-NITROSODIMETHYLAMINE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		N-NITROSODI-N-PROPYLAMINE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		N-NITROSODIPHENYLAMINE	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		PHENOL	UG/L			7.1	U	7	U	7	U			7	U			7.2	U
		PYRIDINE	UG/L			35	U	35	U	35	R			35	R			36	U
PCBs	T	PCB, TOTAL	UG/L			0.21	U	0.21	U	0.21	U			0.21	U				
		PCB-1016 (AROCLOR 1016)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1221 (AROCLOR 1221)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1232 (AROCLOR 1232)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1242 (AROCLOR 1242)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1248 (AROCLOR 1248)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1254 (AROCLOR 1254)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1260 (AROCLOR 1260)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1262 (AROCLOR 1262)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
		PCB-1268 (AROCLOR 1268)	UG/L			0.023	U	0.024	U	0.024	U			0.023	U				
Pesticides	T	ALDRIN	UG/L																
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L																
		ALPHA ENDOSULFAN	UG/L																
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L																
		BETA ENDOSULFAN	UG/L																
		CIS-CHLORDANE	UG/L																
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L																
		DIELDRIN	UG/L																
		ENDOSULFAN SULFATE	UG/L																
		ENDRIN	UG/L																
		ENDRIN ALDEHYDE	UG/L																
		ENDRIN KETONE	UG/L																
		GAMMA BHC (LINDANE)	UG/L																
		GAMMA-CHLORDANE	UG/L																
		HEPTACHLOR	UG/L																
		HEPTACHLOR EPOXIDE	UG/L																
		METHOXYCHLOR	UG/L																
		P,P'-DDD	UG/L																
		P,P'-DDE	UG/L																
		P,P'-DDT	UG/L																
		TOXAPHENE	UG/L																

			SDG	SP5537							
			Location	JBW7348				JBW7737B			
			Sample Date	9/28/2022				9/28/2022			
			Sample ID	LORNG_JBW7348_09282022_K		LORNG_JBW7348_09282022FD_K		LORNG_JBW7737B_09282022_K		LORNG_JBW7737B_09282022FD_K	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		HEXACHLOROBENZENE	UG/L	7.1	U						
SVOCs	T	HEXACHLOROBUTADIENE	UG/L	7.1	U						
		HEXACHLOROCYCLOPENTADIENE	UG/L	7.1	U						
		HEXACHLOROETHANE	UG/L	7.1	U						
		ISOPHORONE	UG/L	7.1	U						
		NITROBENZENE	UG/L	7.1	U						
		N-NITROSODIMETHYLAMINE	UG/L	7.1	U						
		N-NITROSODI-N-PROPYLAMINE	UG/L	7.1	U						
		N-NITROSODIPHENYLAMINE	UG/L	7.1	U						
		PHENOL	UG/L	7.1	U						
		PYRIDINE	UG/L	35	U						
PCBs	T	PCB, TOTAL	UG/L								
		PCB-1016 (AROCLOR 1016)	UG/L								
		PCB-1221 (AROCLOR 1221)	UG/L								
		PCB-1232 (AROCLOR 1232)	UG/L								
		PCB-1242 (AROCLOR 1242)	UG/L								
		PCB-1248 (AROCLOR 1248)	UG/L								
		PCB-1254 (AROCLOR 1254)	UG/L								
		PCB-1260 (AROCLOR 1260)	UG/L								
		PCB-1262 (AROCLOR 1262)	UG/L								
		PCB-1268 (AROCLOR 1268)	UG/L								
Pesticides	T	ALDRIN	UG/L								
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L								
		ALPHA ENDOSULFAN	UG/L								
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L								
		BETA ENDOSULFAN	UG/L								
		CIS-CHLORDANE	UG/L								
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L								
		DIELDRIN	UG/L								
		ENDOSULFAN SULFATE	UG/L								
		ENDRIN	UG/L								
		ENDRIN ALDEHYDE	UG/L								
		ENDRIN KETONE	UG/L								
		GAMMA BHC (LINDANE)	UG/L								
		GAMMA-CHLORDANE	UG/L								
		HEPTACHLOR	UG/L								
		HEPTACHLOR EPOXIDE	UG/L								
		METHOXYCHLOR	UG/L								
		P,P'-DDD	UG/L								
		P,P'-DDE	UG/L								
		P,P'-DDT	UG/L								
		TOXAPHENE	UG/L								

Prepared by: AKN
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Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5253				SP5278			SP5537					
			Location	JMW8011	OW16001	OW24001	AA07MW-01	FIELDQC	JMW0683	FIELDQC	JBW7338B	JBW7348		JBW7737B	
			Sample Date	9/17/2022	9/18/2022	9/18/2022	9/20/2022	9/20/2022	9/19/2022	9/30/2022	9/27/2022	9/28/2022		9/28/2022	
			Sample ID	LORNG_JMW8011_09172022_K	LORNG_OW16001_09182022_K	LORNG_OW24001_09182022_K	LORNG_AA07MW01_09202022_K	LORNG_TB14_09202022	LORNG_JMW0683_09192022_K	LORNG_TB15_09302022	LORNG_JBW7338B_09272022_K	LORNG_JBW7348_09282022_K	LORNG_JBW7348_09282022FD_K	LORNG_JBW7737B_09282022_K	LORNG_JBW7737B_09282022FD_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	T	ALUMINUM	UG/L		96 J	140 J	77 J		91 J		20 J	100 U			
		ANTIMONY	UG/L		0.5 U	0.084 J	0.098 J		0.5 U		0.1 J	0.082 J			
		ARSENIC	UG/L		4 U	4 U	4 U		2.8 J		4 U	4 U			
		BARIUM	UG/L		29	14.5	5.4		97.6		104	47.5			
		BERYLLIUM	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U			
		CADMIUM	UG/L		3 U	3 U	3 U		3 U		3 U	3 U			
		CALCIUM	UG/L		97,800	49,200	87,800		112,000		155,000	87,500			
		CHROMIUM, TOTAL	UG/L		4 U	4 U	4 U		4 U		0.97 J	0.52 J			
		COBALT	UG/L		0.74 J	4 U	4 U		2.64 J		3.01 J	4 U			
		COPPER	UG/L		11.5 J	2 J	2.9 J		0.71 J		1.7 J	1.5 J			
		IRON	UG/L		324	124	64.7 J		6,800		4,320	80 U			
		LEAD	UG/L		0.7 J	0.1 J	0.5 U		0.19 J		0.5 U	0.5 U			
		MAGNESIUM	UG/L		19,300	6,820	6,350		20,900		18,000	13,400			
		MANGANESE	UG/L		569	69.8	26.6		1,400		1,140	1.7 J			
		MERCURY	UG/L		0.1 U	0.1 U	0.1 U		0.1 U		0.1 U	0.1 U			
		NICKEL	UG/L		4 U	4 U	4 U		0.92 J		0.45 J	4 U			
		POTASSIUM	UG/L		676 J	1,060	533 J		557 J		1,110	652 J			
		SELENIUM	UG/L		3 U	3 U	0.29 J		3 U		3 U	3 U			
		SILVER	UG/L		0.4 U	0.4 U	0.4 U		0.4 U		0.4 U	0.4 U			
		SODIUM	UG/L		6,980	4,170	6,640		5,550		6,790	6,210			
		THALLIUM	UG/L		0.4 U	0.4 U	0.4 U		0.4 U		0.081 J	0.16 J			
		VANADIUM	UG/L		0.27 J	0.41 J	4 U		0.5 J		4 U	4 U			
		ZINC	UG/L		5.8 J	1.5 J	1.2 J		10 U		1.3 J	10 U			
Perchlorate	T	PERCHLORATE	UG/L												

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5577																SP6227	
			Location	BW01006		BW01008		BW01009		BW12006		FIELDQC		JBW7339B		OW07003		OW08002		OW24001	
			Sample Date	9/30/2022		9/30/2022		9/30/2022		10/1/2022		10/3/2022		10/1/2022		10/2/2022		9/30/2022		10/26/2022	
			Sample ID	LORNG_BW01006_09302022_K		LORNG_BW01006_09302022FD_K		LORNG_BW01008_09302022_K		LORNG_BW01009_09302022_K		LORNG_BW12006_10012022_K		LORNG_TB16_10032022		LORNG_JBW7339B_10012022_K		LORNG_OW07003_10022022_K		LORNG_OW08002_09302022_K		LORNG_OW24001_10262022_K	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,1-TRICHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2,2-TETRACHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1,2-TRICHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROETHENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,1-DICHLOROPROPENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,3-TRICHLOROPROPANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2,4-TRIMETHYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L									0.023	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L									0.023	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
		1,2-DICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,2-DICHLOROPROPANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,3-DICHLOROPROPANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		1,4-DICHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2,2-DICHLOROPROPANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2-CHLOROTOLUENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		2-HEXANONE	UG/L									2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		4-CHLOROTOLUENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		ACETONE	UG/L									2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		BENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOCHLOROMETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMODICHLOROMETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOFORM	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		BROMOMETHANE	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
		CARBON DISULFIDE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CARBON TETRACHLORIDE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROETHANE	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
		CHLOROFORM	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROMETHANE	UG/L									1.1	U	0.85	J	1	U	1	U	1	U	1	U
		CIS-1,2-DICHLOROETHYLENE	UG/L									0.5	U	0.5	U	0.77	J	0.5	U	0.5	U	0.5	U
		CIS-1,3-DICHLOROPROPENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CYCLOHEXANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOCHLOROMETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOMETHANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DICHLORODIFLUOROMETHANE	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
		ETHYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

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			SDG	SP5577																SP6227	
			Location	BW01006				BW01008		BW01009		BW12006		FIELDQC		JBW7339B		OW07003		OW08002		OW24001	
			Sample Date	9/30/2022				9/30/2022		9/30/2022		10/1/2022		10/3/2022		10/1/2022		10/2/2022		9/30/2022		10/26/2022	
			Sample ID	LORNG_BW01006_09302022_K		LORNG_BW01006_09302022FD_K		LORNG_BW01008_09302022_K		LORNG_BW01009_09302022_K		LORNG_BW12006_10012022_K		LORNG_TB16_10032022		LORNG_JBW7339B_10012022_K		LORNG_OW07003_10022022_K		LORNG_OW08002_09302022_K		LORNG_OW24001_10262022_K	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	HEXACHLOROBUTADIENE	UG/L									0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
		IODOMETHANE (METHYL IODIDE)	UG/L									0.5	UJ	0.5	U	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
		ISOPROPYLBENZENE (CUMENE)	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
		METHYL ACETATE	UG/L									0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L									2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L									2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		METHYLCYCLOHEXANE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		METHYLENE CHLORIDE	UG/L									2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		NAPHTHALENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		N-BUTYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		N-PROPYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		SEC-BUTYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		STYRENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		T-BUTYLBENZENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TERT-BUTYL METHYL ETHER	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TETRACHLOROETHYLENE(PCE)	UG/L									0.5	U	0.5	U	1.1	J	0.5	U	0.5	U	0.5	U
		TOLUENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TRANS-1,2-DICHLOROETHENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TRANS-1,3-DICHLOROPROPENE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TRICHLOROETHYLENE (TCE)	UG/L									0.5	U	0.5	U	1.9	J	0.5	U	0.5	U	0.5	U
		TRICHLOROFLUOROMETHANE	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
		VINYL ACETATE	UG/L									0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		VINYL CHLORIDE	UG/L									1	U	1	U	1	U	1	U	1	U	1	U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L													0.47	U	0.47	U	0.48	U		
		2-METHYLNAPHTHALENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		ACENAPHTHENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		ACENAPHTHYLENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		ANTHRACENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		BENZO(A)ANTHRACENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		BENZO(A)PYRENE	UG/L													0.094	U	0.093	U	0.096	U	0.094	UJ
		BENZO(B)FLUORANTHENE	UG/L													0.094	U	0.093	U	0.096	U	0.094	UJ
		BENZO(G,H,I)PERYLENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		BENZO(K)FLUORANTHENE	UG/L													0.094	U	0.093	U	0.096	U	0.094	UJ
		CHRYSENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		DIBENZ(A,H)ANTHRACENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		FLUORANTHENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		FLUORENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		INDENO(1,2,3-C,D)PYRENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		NAPHTHALENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		PENTACHLOROPHENOL	UG/L													0.47	UJ	0.47	UJ	0.48	UJ	0.47	UJ
		PHENANTHRENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ
		PYRENE	UG/L													0.094	UJ	0.093	UJ	0.096	UJ	0.094	UJ

Prepared by: AKN
Date: 12/97/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

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			SDG	SP5577										SP6227	
			Location	BW01006		BW01008	BW01009	BW12006	FIELDQC	JBW7339B	OW07003	OW08002	OW24001		
			Sample Date	9/30/2022		9/30/2022	9/30/2022	10/1/2022	10/3/2022	10/1/2022	10/2/2022	9/30/2022	10/26/2022		
			Sample ID	LORNG_BW01006_09302022_K	LORNG_BW01006_09302022FD_K	LORNG_BW01008_09302022_K	LORNG_BW01009_09302022_K	LORNG_BW12006_10012022_K	LORNG_TB16_10032022	LORNG_JBW7339B_10012022_K	LORNG_OW07003_10022022_K	LORNG_OW08002_09302022_K	LORNG_OW24001_10262022_K		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
		HEXACHLOROBENZENE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
SVOCs	T	HEXACHLOROBUTADIENE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		HEXACHLOROCYCLOPENTADIENE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		HEXACHLOROETHANE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		ISOPHORONE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		NITROBENZENE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		N-NITROSODIMETHYLAMINE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		N-NITROSODI-N-PROPYLAMINE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		N-NITROSODIPHENYLAMINE	UG/L							7.1 UJ	7 U	7.2 U	7.1 U		
		PHENOL	UG/L							7.1 UJ	7 U	7.2 U	7.1 UJ		
		PYRIDINE	UG/L							35 UJ	35 U	36 U	35 U		
PCBs	T	PCB, TOTAL	UG/L												
		PCB-1016 (AROCLOR 1016)	UG/L												
		PCB-1221 (AROCLOR 1221)	UG/L												
		PCB-1232 (AROCLOR 1232)	UG/L												
		PCB-1242 (AROCLOR 1242)	UG/L												
		PCB-1248 (AROCLOR 1248)	UG/L												
		PCB-1254 (AROCLOR 1254)	UG/L												
		PCB-1260 (AROCLOR 1260)	UG/L												
		PCB-1262 (AROCLOR 1262)	UG/L												
		PCB-1268 (AROCLOR 1268)	UG/L												
Pesticides	T	ALDRIN	UG/L												
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L												
		ALPHA ENDOSULFAN	UG/L												
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L												
		BETA ENDOSULFAN	UG/L												
		CIS-CHLORDANE	UG/L												
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L												
		DIELDRIN	UG/L												
		ENDOSULFAN SULFATE	UG/L												
		ENDRIN	UG/L												
		ENDRIN ALDEHYDE	UG/L												
		ENDRIN KETONE	UG/L												
		GAMMA BHC (LINDANE)	UG/L												
		GAMMA-CHLORDANE	UG/L												
		HEPTACHLOR	UG/L												
		HEPTACHLOR EPOXIDE	UG/L												
		METHOXYCHLOR	UG/L												
		P,P'-DDD	UG/L												
		P,P'-DDE	UG/L												
		P,P'-DDT	UG/L												
		TOXAPHENE	UG/L												

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			SDG	SP5577										SP6227
			Location	BW01006		BW01008	BW01009	BW12006	FIELDQC	JBW7339B	OW07003	OW08002		OW24001
			Sample Date	9/30/2022		9/30/2022	9/30/2022	10/1/2022	10/3/2022	10/1/2022	10/2/2022	9/30/2022		10/26/2022
			Sample ID	LORNG_BW01006_09302022_K	LORNG_BW01006_09302022FD_K	LORNG_BW01008_09302022_K	LORNG_BW01009_09302022_K	LORNG_BW12006_10012022_K	LORNG_TB16_10032022	LORNG_JBW7339B_10012022_K	LORNG_OW07003_10022022_K	LORNG_OW08002_09302022_K		LORNG_OW24001_10262022_K
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier
Metals	T	ALUMINUM	UG/L							61 J	16 J	21 J		94 J
		ANTIMONY	UG/L							0.69 J	0.079 J	0.083 J		0.075 J
		ARSENIC	UG/L							4 U	4 U	4 U		4 U
		BARIUM	UG/L							50.6	50.4	58		15
		BERYLLIUM	UG/L							0.5 U	0.5 U	0.5 U		0.5 U
		CADMIUM	UG/L							3 U	3 U	3 U		3 U
		CALCIUM	UG/L							81,600	134,000	105,000		55,000
		CHROMIUM, TOTAL	UG/L							1.2 J	0.7 J	0.68 J		1.1 J
		COBALT	UG/L							4 U	0.98 J	4 U		4 U
		COPPER	UG/L							1.6 J	7.52 J	2 J		3.9 J
		IRON	UG/L							195	35 J	50 J		112
		LEAD	UG/L							0.5 U	0.1 J	0.5 U		0.14 J
		MAGNESIUM	UG/L							8,700	20,100	14,900		7,600
		MANGANESE	UG/L	3.1 J	1.6 J	14.9	188			50.6	1,330	62.2		75.5
		MERCURY	UG/L							0.1 U	0.1 U	0.1 U		0.1 U
		NICKEL	UG/L							4 U	1.2 J	4 U		4 U
		POTASSIUM	UG/L							1,100	1,000	814 J		852 J
		SELENIUM	UG/L							3 U	3 U	3 U		0.53 J
		SILVER	UG/L							0.072 J	0.4 U	0.4 U		0.4 U
		SODIUM	UG/L							3,360	8,950	17,200		3,640
		THALLIUM	UG/L							0.061 J	0.4 U	0.4 U		0.19 J
		VANADIUM	UG/L							4 U	4 U	4 U		4 U
		ZINC	UG/L							10 U	3.1 J	0.81 J		11 U
Perchlorate	T	PERCHLORATE	UG/L											

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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Table 3 - Summary of Data Validation Actions

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Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98397	M537	T	FA98397-4	LORNG_JMW0880_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	22	U	22	R	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	2.2	U	2.2	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	11	U	11	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	11	U	11	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	11	U	11	UJ	RIS	NG/L
			FA98397-5	LORNG_JMW0980_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
			FA98397-6	LORNG_JMW0982_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	J	1.7	J	IAG	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
			FA98397-7	LORNG_JMW0991_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA98397-8	LORNG_LF2MW2_08222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98397-9	LORNG_MMW0002_08222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	UJ	RIS	NG/L
			FA98397-10	LORNG_OW07003_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	93.9	=	93.9	J	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	UJ	RIS	NG/L
FA98576	M537	T	FA98576-1	LORNG_JMW0416B_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	UJ	CCL, LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98576-2	LORNG_JMW0806_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	LCL	NG/L
			FA98576-3	LORNG_JMW0961_08292022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	23	U	23	UJ	RIS, LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	23	U	23	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98576	M537	T			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	23	U	23	UJ	RIS	NG/L
			FA98576-13	LORNG_JMW0992_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98576-4	LORNG_JPZ7808_08302022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	3.7	UJ	RIS	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	3.7	UJ	RIS	NG/L
					8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	3.7	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	UJ	RIS, LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	UJ	RIS	NG/L
			FA98576-4	LORNG_JPZ7808_08302022	Perfluorononanoic acid (PFNA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	RIS	NG/L
			FA98576-5	LORNG_LF3MW3_08292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98576	M537	T	FA98576-6	LORNG_LF3MW4_08292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
			FA98576-7	LORNG_MMW0009_08302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98576-8	LORNG_MMW0018B_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.9	U	3.9	UJ	LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	20	U	20	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.8	U	9.8	UJ	RIS	NG/L
			FA98576-9	LORNG_MMW0422_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
FA98576	M537	T	FA98576-9	LORNG_MMW0422_08302022	Perfluoropentanoic acid (PFPeA)	2.1	J	2.1	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
			FA98576-10	LORNG_MMW0423_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	RIS, LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	4	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	2	U	2	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	UJ	RIS	NG/L
			FA98576-11	LORNG_OW22001_08292022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			FA98576-12	LORNG_RFW-38_08302022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4.5	U	4.5	UJ	LCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	23	U	23	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.3	U	2.3	UJ	RIS	NG/L
FA98616	M537	T	FA98616-1	LORNG_BW14005_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98616-7	LORNG_JMW0241A_08302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.3	U	9.3	UJ	RIS	NG/L
FA98616	M537	T	FA98616-8	LORNG_JMW0882_08302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	25	U	25	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	13	U	13	UJ	RIS	NG/L
			FA98616-9	LORNG_JMW0941_08302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98616-10	LORNG_JPZ7704_08302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98616-12	LORNG_OW10007_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
FA98677	M537	T	FA98677-16	LORNG_BW05006_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98677-9	LORNG_BW06007_09012022	6:2 Fluorotelomer sulfonate (6:2 FTS)	201	=	201	J	MSL	NG/L
			FA98677-17	LORNG_BW10006_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98677-18	LORNG_BW10006_09012022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	21	U	21	UJ	RIS	NG/L
			FA98677-10	LORNG_BW17004_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA98677-11	LORNG_BW17005_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98677-19	LORNG_BW18004_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	38	U	38	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	19	U	19	UJ	RIS	NG/L
			FA98677-20	LORNG_BW22001_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98677-1	LORNG_CBW02_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98677-21	LORNG_FMW3410_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L

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			FA98677-2	LORNG_JBW7403_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98677-22	LORNG_JBW7711_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
FA98677	M537	T	FA98677-23	LORNG_JBW7912_150_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98677-24	LORNG_JBW7912_40_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98677-4	LORNG_JMW0445_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA98677-25	LORNG_JMW7916_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98677-6	LORNG_OW10005_08312022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98677-26	LORNG_OW12001_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA98677-30	LORNG_OW12002_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98677-7	LORNG_OW14004_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98677-8	LORNG_OW17001_08312022	Perfluorobutanoic acid (PFBA)	9	=	9	J	RIS	NG/L
			FA98677-27	LORNG_OW22003_09012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
FA98818	M537	T	FA98818-1	LORNG_043-MW03_09062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98818-2	LORNG_BW05007_09072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98818-3	LORNG_JBW7314_09072022	8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	3.7	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	UJ	HHL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	HHL, RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	3.7	UJ	HHL	NG/L
					Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	HHL	NG/L
			FA98818-3	LORNG_JBW7314_09072022	Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	HHL	NG/L

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FA98818	M537	T			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	HHL	NG/L
			FA98818-5	LORNG_MMW0007A_09082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	R	RIS	NG/L
			FA98818-6	LORNG_MMW0007B_09082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	MSL, MSD	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	MSL, MSD	NG/L
			FA98818-7	LORNG_MMW0132_09082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
FA98981	M537	T	FA98981-12	LORNG_BW06005_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98981-13	LORNG_BW06006_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98981-15	LORNG_JMW1960_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98981-16	LORNG_JMW1982_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98981-18	LORNG_JPZ0349_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98981-9	LORNG_MMW0011_09132022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98981-10	LORNG_MMW0017_09132022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98981-19	LORNG_MMW0124_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA98981-21	LORNG_OW21005_09142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA98981-22	LORNG_OW21005_09142022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA99047-23	LORNG_BSMW3S_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.4	U	4.4	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	404	=	404	J	FDD	NG/L
			FA99047-24	LORNG_BSMW3S_09182022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	585	=	585	J	FDD	NG/L
			FA99047-11	LORNG_BW01005_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99047-12	LORNG_BW17006_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99047-28	LORNG_JBW7215B_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L

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FA99047	M537	T	FA99047-29	LORNG_JBW7304B_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99047-13	LORNG_JMW0602_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99047-16	LORNG_JMW3501_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA99047-17	LORNG_JMW3601_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99047-2	LORNG_JMW8011_09172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	UJ	RIS	NG/L
			FA99047-19	LORNG_JPZ0686_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA99047-4	LORNG_JPZ1382_09172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99047-20	LORNG_JPZ1780_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.3	U	4.3	UJ	RIS	NG/L
			FA99047-6	LORNG_MMW8015_09172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	R	RIS	NG/L
			FA99047-30	LORNG_OW16001_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA99047-21	LORNG_OW24001_09182022	6:2 Fluorotelomer sulfonate (6:2 FTS)	3.3	J	3.7	U	EBG	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
FA99047	M537	T	FA99047-7	LORNG_RFW1144_09172022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	UJ	CCL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99047-22	LORNG_UNK-044_09182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99047-10	LORNG_USGS-2_40_09172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA99090-1	LORNG_044-RW01_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-13	LORNG_AA07MW01_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	R	RIS	NG/L
			FA99090-14	LORNG_AA07MW02_09202022	6:2 Fluorotelomer sulfonate (6:2 FTS)	737	=	737	J	FDD	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	UJ	RIS	NG/L
			FA99090-15	LORNG_AA07MW02_09202022FD	6:2 Fluorotelomer sulfonate (6:2 FTS)	1030	=	1030	J	FDD	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	UJ	RIS	NG/L

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FA99090	M537	T	FA99090-17	LORNG_IDW-EFF04_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
			FA99090-3	LORNG_JBW7335A_09192022	6:2 Fluorotelomer sulfonate (6:2 FTS)	10.9	=	10.9	U	EBG	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA99090-4	LORNG_JBW7336A_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-5	LORNG_JBW7347B_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-18	LORNG_JBW7710B_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA99090-19	LORNG_JBW7738A_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
FA99090	M537	T	FA99090-20	LORNG_JBW7738A_09202022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA99090-25	LORNG_JBW7738B_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-6	LORNG_JBW8009_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
			FA99090-7	LORNG_JMW0301C_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-8	LORNG_JMW0603_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-9	LORNG_JMW0681_09192022	6:2 Fluorotelomer sulfonate (6:2 FTS)	1.9	J	3.7	U	EBG	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-10	LORNG_JMW0681_09192022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-11	LORNG_JMW0683_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA99090-21	LORNG_JMW1565_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	97.5	=	97.5	J	RIS	NG/L

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			FA99090-12	LORNG_JPZ0342_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99090-22	LORNG_MMW0006_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L

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FA99090	M537	T	FA99090-23	LORNG_MMW0326_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA99090-24	LORNG_OW17003_09202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	10	U	10	UJ	RIS	NG/L
FA99400	M537	T	FA99400-31	LORNG_AA11MW01_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-21	LORNG_AA11MW02_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-22	LORNG_AA11MW02_09282022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99400-32	LORNG_AA18MW01_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99400-23	LORNG_AA20MW01_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-33	LORNG_AA20MW02_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-1	LORNG_ASMW101_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA99400-54	LORNG_BW02002_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA99400-55	LORNG_BW03001_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA99400-56	LORNG_BW05011D_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA99400-13	LORNG_BW07003_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	74	U	74	UJ	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	151	=	151	J	MSL	NG/L
			FA99400-58	LORNG_BW10007_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99400-25	LORNG_GC_BW002D_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-34	LORNG_GC_BW002S_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	23	U	23	R	RIS	NG/L
			FA99400-46	LORNG_JBW7316_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99400-26	LORNG_JBW7335B_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-16	LORNG_JBW7338B_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA99400	M537	T	FA99400-5	LORNG_JBW7339A_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-6	LORNG_JBW7341B_09272022	6:2 Fluorotelomer sulfonate (6:2 FTS)	104	=	104	J	MSL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	59.7	=	59.7	J	MSH	NG/L
			FA99400-7	LORNG_JBW7345B_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-35	LORNG_JBW7348_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99400-27	LORNG_JBW7614_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	MSL, MSD	NG/L
			FA99400-17	LORNG_JBW7734_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99400-37	LORNG_JBW7737A_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-39	LORNG_JMW0682_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA99400-40	LORNG_JMW0682_09282022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-8	LORNG_JMW1665_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.1	U	4.1	UJ	RIS	NG/L
			FA99400-9	LORNG_JMW1665_09272022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99400-24	LORNG_BW12005_09282022	Perfluoroheptanesulfonic acid (PFHpS)	94.5	=	94.5	J	CFHD	NG/L
			FA99400-10	LORNG_JMW1684_09272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-28	LORNG_JMW6001_09282022	6:2 Fluorotelomer sulfonate (6:2 FTS)	33.4	=	33.4	J	FDD	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA99400-29	LORNG_JMW6001_09282022FD	6:2 Fluorotelomer sulfonate (6:2 FTS)	57.8	=	57.8	J	FDD	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99400-11	LORNG_JMW7913_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99400-12	LORNG_JMW7913_09292022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	UJ	RIS	NG/L
			FA99400-47	LORNG_NP_BW001D_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L

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FA99400	M537	T	FA99400-61	LORNG_NP_BW001S_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA99400-62	LORNG_NP_OW001_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99400-48	LORNG_OW01002_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	40	U	40	UJ	RIS	NG/L
			FA99400-63	LORNG_OW01003_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99400-64	LORNG_OW01004_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99400-50	LORNG_OW05004_09282022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99400-51	LORNG_OW05004_09282022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA99400-52	LORNG_OW16002_09292022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
FA99403	M537	T	FA99403-13	LORNG_AA18MW02_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-36	LORNG_BB_OW001_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
FA99403	M537	T	FA99403-37	LORNG_BB_OW002_10012022	Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA99403-38	LORNG_BB_OW002_10012022FD	Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	RIS	NG/L
			FA99403-2	LORNG_BW01006_09302022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-14	LORNG_BW01007_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA99403-15	LORNG_BW01008_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
			FA99403-3	LORNG_BW01009_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99403-39	LORNG_BW03002_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA99403-58	LORNG_BW05009_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	36	U	36	UJ	RIS	NG/L
			FA99403-59	LORNG_BW05010_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L

Prepared by:AKN
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			FA99403-5	LORNG_BW09001_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99403-60	LORNG_BW10008_10022022	Perfluorodecane sulfonate (PFDS)	16	U	16	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	16	U	16	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	16	U	16	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	16	U	16	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	16	U	16	UJ	RIS	NG/L
			FA99403-27	LORNG_BW12006_10012022	8:2 Fluorotelomer sulfonate (8:2 FTS)	18	U	18	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	18	U	18	UJ	RIS	NG/L
FA99403	M537	T	FA99403-27	LORNG_BW12006_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-62	LORNG_BW13002_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-46	LORNG_BW13003_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-47	LORNG_BW16001_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-41	LORNG_BW16002_10012022	Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-63	LORNG_BW18003_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA99403-16	LORNG_BW18006_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA99403-48	LORNG_BW18007_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-49	LORNG_BW18007_10012022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L

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			FA99403-28	LORNG_BW18008_10012022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	18	U	18	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
FA99403	M537	T	FA99403-42	LORNG_BW18009_10012022	8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	18	U	18	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	18	U	18	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-50	LORNG_BW18010_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	29	U	29	UJ	RIS	NG/L
			FA99403-17	LORNG_BW20001_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA99403-64	LORNG_BW20002_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-30	LORNG_EBGB_BW001_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-20	LORNG_EBGB_BW002_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-44	LORNG_GC_BW001_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-31	LORNG_JBW7339B_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L

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FA99403	M537	T	FA99403-32	LORNG_JMW0505_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA99403-68	LORNG_OW02002_10032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	26	U	26	R	RIS	NG/L
			FA99403-54	LORNG_OW05003_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-7	LORNG_OW07002_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-55	LORNG_OW07003_10022022	Perfluorododecanoic acid (PFDoA)	18	U	18	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	18	U	18	UJ	RIS	NG/L
			FA99403-8	LORNG_OW08001_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-9	LORNG_OW08001_09302022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-23	LORNG_OW09001_09302022	8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-65	LORNG_OW17002_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	42.5	=	42.5	J	CFHD	NG/L
			FA99403-10	LORNG_OW20001_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA99403-33	LORNG_OW20003_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L

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FA99403	M537	T	FA99403-56	LORNG_OW20004_10022022	Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-66	LORNG_OW20005_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-43	LORNG_OW20006_10012022	Perfluorododecanoic acid (PFDoA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	9.3	U	9.3	UJ	RIS	NG/L
			FA99403-67	LORNG_OW23001_10022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA99403-34	LORNG_WBGB_BW001_10012022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-35	LORNG_WBGB_BW001_10012022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	2	J	2	J	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	3.4	J	3.4	J	RIS	NG/L
FA99403	M537	T	FA99403-35	LORNG_WBGB_BW001_10012022FD	Perfluoropentanoic acid (PFPeA)	3.2	J	3.2	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA99403-12	LORNG_WWTP_WSW_09302022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
FA99474	M537	T	FA99474-3	LORNG_BW18004_10032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.3	U	4.3	UJ	RIS	NG/L
			FA99474-4	LORNG_BW22001_10032022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	18	U	18	UJ	RIS	NG/L
			FA99474-7	LORNG_OW07001_10042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.5	U	3.5	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	6.9	=	6.9	J	LDD	NG/L
			FA99474-8	LORNG_OW10007_10032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/22

Table 3 - Summary of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC165	M537	T	FC165-1	LORNG_BW05011D_10262022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-2	LORNG_BW05011S_10262022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.1	J	3.1	J	RIS	NG/L
FC165	M537	T	FC165-2	LORNG_BW05011S_10262022	Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	15.5	=	15.5	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-3	LORNG_BW06006_10252022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-4	LORNG_BW17006_10262022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	36	U	36	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L

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					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-9	LORNG_GC_BW002D_10252022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	3.7	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	UJ	RIS	NG/L
			FC165-9	LORNG_GC_BW002D_10252022	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	10.8	=	10.8	J	RIS	NG/L
			FC165-10	LORNG_GC_BW002S_10252022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	UJ	RIS	NG/L
FC165	M537	T			Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorononanoic acid (PFNA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	14.8	=	14.8	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-15	LORNG_NP-BW001D_10272022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC165	M537	T	FC165-15	LORNG_NP-BW001D_10272022	Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	R	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	15.3	=	15.3	J	RIS	NG/L
			FC165-16	LORNG_NP-BW001S_10272022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	12.3	=	12.3	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-17	LORNG_NP-OW001_10272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
			FC165-11	LORNG_OW17003_10272022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	7.2	J	7.2	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
			FC165-12	LORNG_OW24001_10262022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP5064	BNASIMD	T	SP5064-1	LORNG_BW05007_09072022_K	CHRYSENE	0.094	U	0.094	UJ	ICD	UG/L
					DIBENZ(A,H)ANTHRACENE	0.094	U	0.094	UJ	ICD	UG/L
			SP5064-2	LORNG_JBW7711_09012022_K	2-METHYLNAPHTHALENE	0.093	U	0.093	UJ	HHL	UG/L
					ACENAPHTHENE	0.093	U	0.093	UJ	HHL	UG/L
					ACENAPHTHYLENE	0.093	U	0.093	UJ	HHL	UG/L
					ANTHRACENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(A)ANTHRACENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(A)PYRENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(B)FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(G,H,I)PERYLENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(K)FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
					CHRYSENE	0.093	U	0.093	UJ	HHL	UG/L
					DIBENZ(A,H)ANTHRACENE	0.093	U	0.093	UJ	HHL	UG/L
					FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
					FLUORENE	0.093	U	0.093	UJ	HHL	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.093	U	0.093	UJ	HHL	UG/L
					NAPHTHALENE	0.093	U	0.093	UJ	HHL	UG/L
					PENTACHLOROPHENOL	0.47	U	0.47	UJ	HHL	UG/L
					PHENANTHRENE	0.093	U	0.093	UJ	HHL	UG/L
					PYRENE	0.093	U	0.093	UJ	HHL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	2-METHYLNAPHTHALENE	4.7		4.7	J	HHL	UG/L
					ACENAPHTHENE	0.1	J	0.1	J	HHL	UG/L
					ACENAPHTHYLENE	0.093	U	0.093	UJ	HHL	UG/L
					ANTHRACENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(A)ANTHRACENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(A)PYRENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(B)FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
	BNASIMD	T	SP5064-4	LORNG_JMW0445_08312022_K	BENZO(G,H,I)PERYLENE	0.093	U	0.093	UJ	HHL	UG/L
					BENZO(K)FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
					CHRYSENE	0.093	U	0.093	UJ	HHL, ICD	UG/L
					DIBENZ(A,H)ANTHRACENE	0.093	U	0.093	UJ	HHL, ICD	UG/L
					FLUORANTHENE	0.093	U	0.093	UJ	HHL	UG/L
					FLUORENE	0.09	J	0.09	J	HHL	UG/L

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SP5064					INDENO(1,2,3-C,D)PYRENE	0.093	U	0.093	UJ	HHL	UG/L
					NAPHTHALENE	3.2		3.2	J	HHL	UG/L
					PENTACHLOROPHENOL	0.47	U	0.47	UJ	HHL	UG/L
					PHENANTHRENE	0.093	U	0.093	UJ	HHL	UG/L
					PYRENE	0.093	U	0.093	UJ	HHL	UG/L
	SW6010C	T	SP5064-1	LORNG_BW05007_09072022_K	IRON	24	J	80	U	CBL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	CHROMIUM, TOTAL	0.9	J	4	U	CBL	UG/L
					VANADIUM	0.31	J	4	U	LBL	UG/L
			SP5064-6	LORNG_OW17001_08312022_K	VANADIUM	0.3	J	4	U	LBL	UG/L
	SW6020A	T	SP5064-1	LORNG_BW05007_09072022_K	ANTIMONY	0.12	J	0.5	U	LBL	UG/L
					THALLIUM	0.29	J	0.4	U	LBL	UG/L
			SP5064-2	LORNG_JBW7711_09012022_K	ANTIMONY	0.16	J	0.5	U	LBL	UG/L
					THALLIUM	0.17	J	0.4	U	LBL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	ANTIMONY	0.16	J	0.5	U	LBL	UG/L
					THALLIUM	0.098	J	0.4	U	LBL	UG/L
			SP5064-6	LORNG_OW17001_08312022_K	ANTIMONY	0.092	J	0.5	U	LBL	UG/L
					THALLIUM	0.29	J	0.4	U	LBL	UG/L
	SW7470A	T	SP5064-1	LORNG_BW05007_09072022_K	MERCURY	0.052	J	0.1	U	LBL	UG/L
			SP5064-2	LORNG_JBW7711_09012022_K	MERCURY	0.043	J	0.1	U	LBL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	MERCURY	0.048	J	0.1	U	LBL	UG/L
			SP5064-6	LORNG_OW17001_08312022_K	MERCURY	0.046	J	0.1	U	LBL	UG/L
	SW8011	T	SP5064-1	LORNG_BW05007_09072022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
			SP5064-2	LORNG_JBW7711_09012022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
			SP5064-3	LORNG_JBW7711_09012022FD_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L

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SP5064			SP5064-5	LORNG_OW12001_09012022_K	1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
	SW8081B	T	SP5064-1	LORNG_BW05007_09072022_K	ALDRIN	0.023	U	0.023	UJ	HHL	UG/L
					ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	0.023	U	0.023	UJ	HHL	UG/L
					ALPHA ENDOSULFAN	0.023	U	0.023	UJ	HHL	UG/L
					BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	0.023	U	0.023	UJ	HHL	UG/L
					BETA ENDOSULFAN	0.047	U	0.047	UJ	HHL	UG/L
					CIS-CHLORDANE	0.023	U	0.023	UJ	HHL	UG/L
					DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	0.023	U	0.023	UJ	HHL	UG/L
					DIELDRIN	0.047	U	0.047	UJ	HHL	UG/L
					ENDOSULFAN SULFATE	0.047	U	0.047	UJ	HHL	UG/L
					ENDRIN	0.047	U	0.047	UJ	HHL	UG/L
					ENDRIN ALDEHYDE	0.047	U	0.047	UJ	HHL	UG/L
					ENDRIN KETONE	0.047	U	0.047	UJ	HHL	UG/L
					GAMMA BHC (LINDANE)	0.023	U	0.023	UJ	HHL	UG/L
SP5064	SW8081B	T	SP5064-1	LORNG_BW05007_09072022_K	GAMMA-CHLORDANE	0.023	U	0.023	UJ	HHL	UG/L
					HEPTACHLOR	0.023	U	0.023	UJ	HHL	UG/L
					HEPTACHLOR EPOXIDE	0.023	U	0.023	UJ	HHL	UG/L
					METHOXYCHLOR	0.23	U	0.23	UJ	HHL	UG/L
					P,P'-DDD	0.047	U	0.047	UJ	HHL	UG/L
					P,P'-DDE	0.047	U	0.047	UJ	HHL	UG/L
					P,P'-DDT	0.047	U	0.047	UJ	HHL	UG/L
					TOXAPHENE	0.47	U	0.47	UJ	HHL	UG/L
	SW8260C	T	SP5064-4	LORNG_JMW0445_08312022_K	1,2,4-TRIMETHYLBENZENE	53	M	53	J	MSH	UG/L
					CARBON TETRACHLORIDE	0.5	U	0.5	UJ	SVLL	UG/L
					CHLOROETHANE	1	UM	1	UJ	SVLL, CCL	UG/L
					CYCLOHEXANE	66	M	66	J	MSH	UG/L
					METHYLCYCLOHEXANE	120	M	120	J	MSH, MSD	UG/L
					METHYLENE CHLORIDE	1.2	JMM	2.5	U	TBL	UG/L
					VINYL ACETATE	0.5	U	0.5	UJ	SVLL	UG/L
					CARBON TETRACHLORIDE	0.5	U	0.5	UJ	SVLL	UG/L

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			SP5064-5	LORNG_OW12001_09012022_K	CHLOROETHANE	1	U	1	UJ	SVLL	UG/L
					METHYLENE CHLORIDE	1.4	J	2.5	U	TBL	UG/L
					VINYL ACETATE	0.5	U	0.5	UJ	SVLL, CCL	UG/L
	SW8270D	T	SP5064-1	LORNG_BW05007_09072022_K	2,3,4,6-TETRACHLOROPHENOL	7.1	UM	7.1	UJ	MSL, MSD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UM	18	UJ	MSL, MSD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UM	7.1	UJ	MSL, MSD	UG/L
					2,4-DINITROPHENOL	18	UM	18	R	MSL, MSD	UG/L
SP5064	SW8270D	T	SP5064-1	LORNG_BW05007_09072022_K	2-NITROPHENOL	7.1	UM	7.1	UJ	MSL, MSD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UM	18	R	MSL, MSD	UG/L
					4-NITROPHENOL	18	ULMM	18	R	MSL, MSH, MSD	UG/L
					BENZALDEHYDE	7.1	ULMM	7.1	UJ	ICD	UG/L
					BENZIDINE	35	UM	35	UJ	ICD, SVLL	UG/L
					BENZOIC ACID	18	UM	18	R	MSL, MSD	UG/L
					BENZYL ALCOHOL	14	UL	14	UJ	SVLL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UM	7.1	UJ	MSL, MSD	UG/L
			SP5064-2	LORNG_JBW7711_09012022_K	1,2,4-TRICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,2-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,2-DIPHENYLHYDRAZINE	14	U	14	UJ	HHL	UG/L
					1,3-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,4-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1-METHYLNAPHTHALENE	7	U	7	UJ	HHL	UG/L
					2,2'-OXYBIS(1-CHLORO)PROPANE	7	U	7	UJ	HHL	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	HHL	UG/L
					2,4,6-TRICHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4-DICHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4-DIMETHYLPHENOL	7	U	7	UJ	HHL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					2,4-DINITROPHENOL	18	U	18	UJ	HHL	UG/L
					2,4-DINITROTOLUENE	7	U	7	UJ	HHL	UG/L
					2,6-DINITROTOLUENE	7	U	7	UJ	HHL	UG/L
SP5064	SW8270D	T	SP5064-1	LORNG_BW05007_09072022_K	2-CHLORONAPHTHALENE	7	U	7	UJ	HHL	UG/L
					2-CHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7	U	7	UJ	HHL	UG/L
					2-NITROANILINE	18	U	18	UJ	HHL	UG/L
					2-NITROPHENOL	7	U	7	UJ	HHL	UG/L
					3,3'-DICHLOROBENZIDINE	7	U	7	UJ	HHL	UG/L
					3-NITROANILINE	18	U	18	UJ	HHL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	HHL	UG/L
					4-BROMOPHENYL PHENYL ETHER	7	U	7	UJ	HHL	UG/L
					4-CHLORO-3-METHYLPHENOL	7	U	7	UJ	HHL	UG/L
					4-CHLOROANILINE	7	U	7	UJ	HHL	UG/L
					4-CHLOROPHENYL PHENYL ETHER	7	U	7	UJ	HHL	UG/L
					4-NITROANILINE	18	UL	18	UJ	HHL	UG/L
					4-NITROPHENOL	18	UL	18	UJ	HHL	UG/L
					ANTHRACENE	7	U	7	UJ	HHL	UG/L
					BENZALDEHYDE	7	UL	7	UJ	HHL	UG/L
					BENZIDINE	35	U	35	UJ	HHL	UG/L
					BENZOIC ACID	18	U	18	UJ	HHL	UG/L
					BENZYL ALCOHOL	14	UL	14	UJ	HHL	UG/L
					BENZYL BUTYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					BIPHENYL (DIPHENYL)	7	U	7	UJ	HHL	UG/L
					BIS(2-CHLOROETHOXY) METHANE	7	U	7	UJ	HHL	UG/L
					BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	7	U	7	UJ	HHL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	7	U	7	UJ	HHL	UG/L
					CARBAZOLE	7	U	7	UJ	HHL	UG/L
					CRESOLS, M & P	7	U	7	UJ	HHL	UG/L
					DIETHYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					DIMETHYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					DI-N-BUTYL PHTHALATE	7	U	7	UJ	HHL	UG/L

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/22

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SP5064	SW8270D	T	SP5064-1	LORNG_BW05007_09072022_K	DI-N-OCTYLPHTHALATE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROBUTADIENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROETHANE	7	U	7	UJ	HHL	UG/L
					ISOPHORONE	7	U	7	UJ	HHL	UG/L
					NITROBENZENE	7	U	7	UJ	HHL	UG/L
					N-NITROSODIMETHYLAMINE	7	U	7	UJ	HHL	UG/L
					N-NITROSODI-N-PROPYLAMINE	7	U	7	UJ	HHL	UG/L
					N-NITROSODIPHENYLAMINE	7	U	7	UJ	HHL	UG/L
					PHENOL	7	U	7	UJ	HHL	UG/L
					PYRIDINE	35	U	35	UJ	HHL	UG/L
			SP5064-4	LORNG_JMW0445_08312022_K	1,2,4-TRICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,2-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,2-DIPHENYLHYDRAZINE	14	U	14	UJ	HHL	UG/L
					1,3-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1,4-DICHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					1-METHYLNAPHTHALENE	6	J	6	J	HHL	UG/L
					2,2'-OXYBIS(1-CHLORO)PROPANE	7	U	7	UJ	HHL	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	HHL	UG/L
					2,4,6-TRICHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4-DICHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2,4-DIMETHYLPHENOL	7	U	7	UJ	HHL	UG/L
					2,4-DINITROPHENOL	18	U	18	UJ	HHL	UG/L
					2,4-DINITROTOLUENE	7	U	7	UJ	HHL	UG/L
					2,6-DINITROTOLUENE	7	U	7	UJ	HHL	UG/L
					2-CHLORONAPHTHALENE	7	U	7	UJ	HHL	UG/L
					2-CHLOROPHENOL	7	U	7	UJ	HHL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7	U	7	UJ	HHL	UG/L
					2-NITROANILINE	18	U	18	UJ	HHL	UG/L
					2-NITROPHENOL	7	U	7	UJ	HHL	UG/L
					3,3'-DICHLOROBENZIDINE	7	U	7	UJ	HHL	UG/L

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SP5064	SW8270D	T	SP5064-4	LORNG_JMW0445_08312022_K	3-NITROANILINE	18	U	18	UJ	HHL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	HHL	UG/L
					4-BROMOPHENYL PHENYL ETHER	7	U	7	UJ	HHL	UG/L
					4-CHLORO-3-METHYLPHENOL	7	U	7	UJ	HHL	UG/L
					4-CHLOROANILINE	7	U	7	UJ	HHL	UG/L
					4-CHLOROPHENYL PHENYL ETHER	7	U	7	UJ	HHL	UG/L
					4-NITROANILINE	18	UL	18	UJ	HHL	UG/L
					4-NITROPHENOL	18	UL	18	UJ	HHL	UG/L
					ANTHRACENE	7	U	7	UJ	HHL	UG/L
					BENZALDEHYDE	7	UL	7	UJ	HHL, ICD	UG/L
					BENZIDINE	35	U	35	UJ	HHL, ICD, SVLL	UG/L
					BENZOIC ACID	18	U	18	UJ	HHL	UG/L
					BENZYL ALCOHOL	14	UL	14	UJ	HHL, SVLL	UG/L
					BENZYL BUTYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					BIPHENYL (DIPHENYL)	7	U	7	UJ	HHL	UG/L
					BIS(2-CHLOROETHOXY) METHANE	7	U	7	UJ	HHL	UG/L
SP5064	SW8270D	T	SP5064-4	LORNG_JMW0445_08312022_K	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	7	U	7	UJ	HHL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	7	U	7	UJ	HHL	UG/L
					CARBAZOLE	7	U	7	UJ	HHL	UG/L
					CRESOLS, M & P	7	U	7	UJ	HHL	UG/L
					DIETHYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					DIMETHYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					DI-N-BUTYL PHTHALATE	7	U	7	UJ	HHL	UG/L
					DI-N-OCTYLPHTHALATE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROBENZENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROBUTADIENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	U	7	UJ	HHL	UG/L
					HEXACHLOROETHANE	7	U	7	UJ	HHL	UG/L
					ISOPHORONE	7	U	7	UJ	HHL	UG/L
					NITROBENZENE	7	U	7	UJ	HHL	UG/L
					N-NITROSODIMETHYLAMINE	7	U	7	UJ	HHL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-NITROSODI-N-PROPYLAMINE	7	U	7	UJ	HHL	UG/L
					N-NITROSODIPHENYLAMINE	7	U	7	UJ	HHL	UG/L
					PHENOL	7	U	7	UJ	HHL	UG/L
					PYRIDINE	35	U	35	UJ	HHL	UG/L
SP5209	SW6010C	T	SP5209-1	LORNG_BW06005_09142022_K	ZINC	1.2	JB	10	U	LBM	UG/L
			SP5209-2	LORNG_JPZ0349_09142022_K	ZINC	0.95	JB	10	U	LBM	UG/L
			SP5209-5	LORNG_OW21005_09142022_K	ZINC	0.76	JB	10	U	LBM	UG/L
	SW6020A	T	SP5209-1	LORNG_BW06005_09142022_K	THALLIUM	0.3	J	0.4	U	LBL	UG/L
			SP5209-2	LORNG_JPZ0349_09142022_K	THALLIUM	0.14	J	0.4	U	LBL	UG/L
			SP5209-5	LORNG_OW21005_09142022_K	THALLIUM	0.068	J	0.4	U	LBL	UG/L

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SP5209	SW8011	T	SP5209-1	LORNG_BW06005_09142022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
			SP5209-2	LORNG_JPZ0349_09142022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
			SP5209-5	LORNG_OW21005_09142022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	UJ	HHL	UG/L
	SW8260C	T	SP5209-5	LORNG_OW21005_09142022_K	CHLOROMETHANE	0.54	J	1	U	TBL	UG/L
	SW8270D	T	SP5209-1	LORNG_BW06005_09142022_K	2,3,4,6-TETRACHLOROPHENOL	7	U	7	UJ	SGL	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	SGL	UG/L
					2,4,6-TRICHLOROPHENOL	7	U	7	UJ	SGL	UG/L
					2,4-DICHLOROPHENOL	7	U	7	UJ	SGL	UG/L
					2,4-DIMETHYLPHENOL	7	U	7	UJ	SGL	UG/L
					2,4-DINITROPHENOL	18	U	18	UJ	SGL	UG/L
					2-CHLOROPHENOL	7	U	7	UJ	SGL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7	U	7	UJ	SGL	UG/L
					2-NITROPHENOL	7	U	7	UJ	SGL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	SGL	UG/L
					4-CHLORO-3-METHYLPHENOL	7	U	7	UJ	SGL	UG/L
					4-NITROPHENOL	18	ULL	18	UJ	SGL	UG/L
					BENZOIC ACID	18	UL	18	UJ	SGL	UG/L
					CRESOLS, M & P	7	U	7	UJ	SGL	UG/L
					PHENOL	7	U	7	UJ	SGL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP5209	SW8270D	T	SP5209-2	LORNG_JPZ0349_09142022_K	BIS(2-ETHYLHEXYL) PHTHALATE	1.7	J	7.1	U	LBL	UG/L
					DI-N-OCTYLPHTHALATE	7.1	U	7.1	UJ	ISL	UG/L
			SP5209-5	LORNG_OW21005_09142022_K	BIS(2-ETHYLHEXYL) PHTHALATE	3.1	J	7.1	U	LBL	UG/L
SP5253	BNASIMD	T	SP5253-3	LORNG_OW16001_09182022_K	PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
			SP5253-2	LORNG_OW24001_09182022_K	PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
	SW6010C	T	SP5253-3	LORNG_OW16001_09182022_K	CHROMIUM, TOTAL	1.5	J	4	U	LBL	UG/L
			SP5253-2	LORNG_OW24001_09182022_K	CHROMIUM, TOTAL	1.6	J	4	U	LBL	UG/L
	SW6020A	T	SP5253-3	LORNG_OW16001_09182022_K	THALLIUM	0.19	J	0.4	U	LBL	UG/L
			SP5253-2	LORNG_OW24001_09182022_K	THALLIUM	0.24	J	0.4	U	LBL	UG/L
	SW8270D	T	SP5253-3	LORNG_OW16001_09182022_K	2,3,4,6-TETRACHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	ULL	7.1	R	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	ULL	7.1	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					BENZOIC ACID	18	UL	18	R	LCL, LCD	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	UJ	LCL, LCD	UG/L
			SP5253-2	LORNG_OW24001_09182022_K	2,3,4,6-TETRACHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7	ULL	7	R	LCL, LCD	UG/L
					2-NITROPHENOL	7	ULL	7	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					BENZOIC ACID	18	UL	18	R	LCL, LCD	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	UL	7	UJ	LCL, LCD	UG/L
	BNASIMD	T	SP5278-2	LORNG_AA07MW01_09202022_K	PENTACHLOROPHENOL	0.47	UL	0.47	R	LCL, LCD	UG/L
			SP5278-3	LORNG_JMW0683_09192022_K	PENTACHLOROPHENOL	0.47	UL	0.47	R	LCL, LCD	UG/L
	SW6010C	T	SP5278-2	LORNG_AA07MW01_09202022_K	CHROMIUM, TOTAL	1.6	J	4	U	LBL	UG/L
			SP5278-3	LORNG_JMW0683_09192022_K	CHROMIUM, TOTAL	1.6	J	4	U	LBL	UG/L
	SW6020A	T	SP5278-2	LORNG_AA07MW01_09202022_K	THALLIUM	0.12	J	0.4	U	LBL	UG/L
			SP5278-3	LORNG_JMW0683_09192022_K	THALLIUM	0.084	J	0.4	U	LBL	UG/L

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SP5278	SW8270D	T	SP5278-2	LORNG_AA07MW01_09202022_K	2,3,4,6-TETRACHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2-CHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	R	LCL, LCD	UG/L
					4-NITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					BENZIDINE	35	UL	35	R	LCL, LCD	UG/L
					BENZOIC ACID	18	ULL	18	R	LCL, LCD	UG/L
					PYRIDINE	35	UL	35	R	LCL, LCD	UG/L
			SP5278-3	LORNG_JMW0683_09192022_K	1-METHYLNAPHTHALENE	6.5	J	6.5	J	LCD	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2-CHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	R	LCL, LCD	UG/L
SP5278	SW8270D	T	SP5278-3	LORNG_JMW0683_09192022_K	4-NITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					BENZIDINE	35	UL	35	R	LCL, LCD	UG/L
					BENZOIC ACID	18	ULL	18	R	LCL, LCD	UG/L
					PYRIDINE	35	UL	35	R	LCL, LCD	UG/L
	SW6010C	T	SP5537-5	LORNG_JBW7338B_09272022_K	VANADIUM	0.28	J	4	U	LBL	UG/L
			SP5537-1	LORNG_JBW7348_09282022_K	VANADIUM	0.86	J	4	U	LBL	UG/L
	SW7470A	T	SP5537-5	LORNG_JBW7338B_09272022_K	MERCURY	0.03	J	0.1	U	LBL	UG/L
			SP5537-1	LORNG_JBW7348_09282022_K	MERCURY	0.039	J	0.1	U	LBL	UG/L
	SW8011	T	SP5537-5	LORNG_JBW7338B_09272022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	U	0.024	R	SGL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	U	0.024	R	SGL	UG/L
			SP5537-5	LORNG_JBW7338B_09272022_K	IODOMETHANE (METHYL IODIDE)	0.5	UL	0.5	UJ	LCL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP5537	SW8260C	T	SP5537-1	LORNG_JBW7348_09282022_K	1,1,1-TRICHLOROETHANE	26		26	J	SGH	UG/L
					1,1-DICHLOROETHANE	1.4		1.4	J	SGH	UG/L
					1,1-DICHLOROETHENE	3.5		3.5	J	SGH	UG/L
					CIS-1,2-DICHLOROETHYLENE	59		59	J	SGH	UG/L
					TRANS-1,2-DICHLOROETHENE	0.96	J	0.96	J	SGH	UG/L
					VINYL CHLORIDE	1.2	J	1.2	J	SGH	UG/L
			SP5537-3	LORNG_JBW7737B_09282022_K	CIS-1,2-DICHLOROETHYLENE	0.27	J	0.27	J	SGH	UG/L
	SW8270D	T	SP5537-5	LORNG_JBW7338B_09272022_K	2,3,4,6-TETRACHLOROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.2	UL	7.2	R	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.2	UL	7.2	R	LCL, LCD	UG/L
					2-NITROPHENOL	7.2	UL	7.2	R	LCL, LCD	UG/L
					4-CHLORO-3-METHYLPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					CRESOLS, M & P	7.2	UL	7.2	UJ	LCL, LCD	UG/L
SP5537	SW8270D	T	SP5537-1	LORNG_JBW7348_09282022_K	2,3,4,6-TETRACHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					4-CHLORO-3-METHYLPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					CRESOLS, M & P	7.1	UL	7.1	UJ	LCL, LCD	UG/L
SP5577	BNASIMD	T	SP5577-6	LORNG_JBW7339B_10012022_K	2-METHYLNAPHTHALENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					ACENAPHTHENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					ACENAPHTHYLENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					ANTHRACENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					BENZO(A)ANTHRACENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					BENZO(G,H,I)PERYLENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					CHRYSENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					DIBENZ(A,H)ANTHRACENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					FLUORANTHENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					FLUORENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/22

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					INDENO(1,2,3-C,D)PYRENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					NAPHTHALENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
					PHENANTHRENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
					PYRENE	0.094	UL	0.094	UJ	LCL, LCD	UG/L
			SP5577-7	LORNG_OW07003_10022022_K	2-METHYLNAPHTHALENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					ACENAPHTHENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					ACENAPHTHYLENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					ANTHRACENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					BENZO(A)ANTHRACENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					BENZO(G,H,I)PERYLENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					CHRYSENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					DIBENZ(A,H)ANTHRACENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					FLUORANTHENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
			SP5577-7	LORNG_OW07003_10022022_K	FLUORENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					NAPHTHALENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
					PHENANTHRENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					PYRENE	0.093	UL	0.093	UJ	LCL, LCD	UG/L
					2-METHYLNAPHTHALENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					ACENAPHTHENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
SP5577	BNASIMD	T			ACENAPHTHYLENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					ANTHRACENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					BENZO(A)ANTHRACENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					BENZO(G,H,I)PERYLENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					CHRYSENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
			SP5577-8	LORNG_OW08002_09302022_K	DIBENZ(A,H)ANTHRACENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					FLUORANTHENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					FLUORENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					NAPHTHALENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					PENTACHLOROPHENOL	0.48	UL	0.48	UJ	LCL, LCD	UG/L

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					PHENANTHRENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
					PYRENE	0.096	UL	0.096	UJ	LCL, LCD	UG/L
	SW6010C	T	SP5577-7	LORNG_OW07003_10022022_K	VANADIUM	0.65	J	4	U	LBL	UG/L
SP5577	SW6010C	T	SP5577-8	LORNG_OW08002_09302022_K	VANADIUM	0.25	J	4	U	LBL	UG/L
	SW8260C	T	SP5577-5	LORNG_BW12006_10012022_K	CHLOROMETHANE	1.1	J	1.1	U	TBL	UG/L
					IODOMETHANE (METHYL IODIDE)	0.5	ULL	0.5	UJ	LCL	UG/L
			SP5577-6	LORNG_JBW7339B_10012022_K	CIS-1,2-DICHLOROETHYLENE	0.77	J	0.77	J	SGH	UG/L
					IODOMETHANE (METHYL IODIDE)	0.5	ULL	0.5	UJ	LCL	UG/L
					TETRACHLOROETHYLENE(PCE)	1.1		1.1	J	SGH	UG/L
					TRICHLOROETHYLENE (TCE)	1.9		1.9	J	SGH	UG/L
			SP5577-7	LORNG_OW07003_10022022_K	IODOMETHANE (METHYL IODIDE)	0.5	ULL	0.5	UJ	LCL	UG/L
			SP5577-8	LORNG_OW08002_09302022_K	IODOMETHANE (METHYL IODIDE)	0.5	ULL	0.5	UJ	LCL	UG/L
	SW8270D	T	SP5577-6	LORNG_JBW7339B_10012022_K	1,2,4-TRICHLOROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					1,2-DICHLOROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					1,2-DIPHENYLHYDRAZINE	14	U	14	UJ	SGL	UG/L
					1,3-DICHLOROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					1,4-DICHLOROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					1-METHYLNAPHTHALENE	7.1	U	7.1	UJ	SGL	UG/L
					2,2'-OXYBIS(1-CHLORO)PROPANE	7.1	U	7.1	UJ	SGL	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7.1	UL	7.1	UJ	SGL, LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	SGL, LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	SGL, LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	SGL, LCL, LCD	UG/L
					2,4-DIMETHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DINITROPHENOL	18	UL	18	R	SGL, LCL, LCD	UG/L
					2,4-DINITROTOLUENE	7.1	U	7.1	UJ	SGL	UG/L
					2,6-DINITROTOLUENE	7.1	U	7.1	UJ	SGL	UG/L
					2-CHLORONAPHTHALENE	7.1	U	7.1	UJ	SGL	UG/L
					2-CHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7.1	U	7.1	UJ	SGL	UG/L

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SP5577	SW8270D	T	SP5577-6	LORNG_JBW7339B_10012022_K	2-NITROANILINE	18	U	18	UJ	SGL	UG/L
					2-NITROPHENOL	7.1	UL	7.1	UJ	SGL, LCL, LCD	UG/L
					3,3'-DICHLOROBENZIDINE	7.1	U	7.1	UJ	SGL	UG/L
					3-NITROANILINE	18	U	18	UJ	SGL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	R	SGL, LCL, LCD	UG/L
					4-BROMOPHENYL PHENYL ETHER	7.1	U	7.1	UJ	SGL	UG/L
					4-CHLORO-3-METHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					4-CHLOROANILINE	7.1	U	7.1	UJ	SGL	UG/L
					4-CHLOROPHENYL PHENYL ETHER	7.1	U	7.1	UJ	SGL	UG/L
					4-NITROANILINE	18	U	18	UJ	SGL	UG/L
					4-NITROPHENOL	18	UL	18	R	SGL, LCL, LCD	UG/L
					ANTHRACENE	7.1	U	7.1	UJ	SGL	UG/L
					BENZALDEHYDE	7.1	ULL	7.1	UJ	SGL	UG/L
					BENZIDINE	35	UL	35	UJ	SGL	UG/L
					BENZOIC ACID	18	UL	18	R	SGL, LCL, LCD	UG/L
					BENZYL ALCOHOL	14	U	14	UJ	SGL	UG/L
					BENZYL BUTYL PHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
					BIPHENYL (DIPHENYL)	7.1	U	7.1	UJ	SGL	UG/L
					BIS(2-CHLOROETHOXY) METHANE	7.1	U	7.1	UJ	SGL	UG/L
					BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	7.1	U	7.1	UJ	SGL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
			SP5577-6	LORNG_JBW7339B_10012022_K	CARBAZOLE	7.1	U	7.1	UJ	SGL	UG/L
					CRESOLS, M & P	7.1	U	7.1	UJ	SGL	UG/L
					DIETHYL PHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
					DIMETHYL PHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
					DI-N-BUTYL PHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
					DI-N-OCTYLPHTHALATE	7.1	U	7.1	UJ	SGL	UG/L
					HEXACHLOROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					HEXACHLOROBUTADIENE	7.1	U	7.1	UJ	SGL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	U	7.1	UJ	SGL	UG/L

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SP5577	SW8270D	T			HEXACHLOROETHANE	7.1	U	7.1	UJ	SGL	UG/L
					ISOPHORONE	7.1	U	7.1	UJ	SGL	UG/L
					NITROBENZENE	7.1	U	7.1	UJ	SGL	UG/L
					N-NITROSODIMETHYLAMINE	7.1	U	7.1	UJ	SGL	UG/L
					N-NITROSODI-N-PROPYLAMINE	7.1	U	7.1	UJ	SGL	UG/L
					N-NITROSODIPHENYLAMINE	7.1	U	7.1	UJ	SGL	UG/L
					PHENOL	7.1	U	7.1	UJ	SGL	UG/L
					PYRIDINE	35	U	35	UJ	SGL	UG/L
			SP5577-7	LORNG_OW07003_10022022_K	2,3,4,6-TETRACHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2-NITROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	R	LCL, LCD	UG/L
					4-NITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					BENZOIC ACID	18	UL	18	R	LCL, LCD	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L

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SP5577	SW8270D	T	SP5577-8	LORNG_OW08002_09302022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2-NITROPHENOL	7.2	UL	7.2	UJ	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	R	LCL, LCD	UG/L
					4-NITROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					BENZOIC ACID	18	UL	18	R	LCL, LCD	UG/L
SP6227	BNASIMD	T	SP6227-1	LORNG_OW24001_10262022_K	2-METHYLNAPHTHALENE	0.094	U	0.094	UJ	SGL	UG/L
					ACENAPHTHENE	0.094	U	0.094	UJ	SGL	UG/L
					ACENAPHTHYLENE	0.094	U	0.094	UJ	SGL	UG/L
					ANTHRACENE	0.094	U	0.094	UJ	SGL	UG/L
					BENZO(A)ANTHRACENE	0.094	U	0.094	UJ	SGL	UG/L
					BENZO(A)PYRENE	0.094	U	0.094	UJ	SGL	UG/L
					BENZO(B)FLUORANTHENE	0.094	U	0.094	UJ	SGL	UG/L
					BENZO(G,H,I)PERYLENE	0.094	U	0.094	UJ	SGL	UG/L
					BENZO(K)FLUORANTHENE	0.094	U	0.094	UJ	SGL	UG/L
					CHRYSENE	0.094	U	0.094	UJ	SGL	UG/L
					DIBENZ(A,H)ANTHRACENE	0.094	U	0.094	UJ	SGL	UG/L
					FLUORANTHENE	0.094	U	0.094	UJ	SGL	UG/L
					FLUORENE	0.094	U	0.094	UJ	SGL	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.094	U	0.094	UJ	SGL	UG/L
					NAPHTHALENE	0.094	U	0.094	UJ	SGL	UG/L
					PENTACHLOROPHENOL	0.47	U	0.47	UJ	HHL	UG/L
					PHENANTHRENE	0.094	U	0.094	UJ	SGL	UG/L
					PYRENE	0.094	U	0.094	UJ	SGL	UG/L
	SW6010C	T	SP6227-1	LORNG_OW24001_10262022_K	ZINC	11	J	11	U	LBL	UG/L
	SW8260C	T	SP6227-1	LORNG_OW24001_10262022_K	IODOMETHANE (METHYL IODIDE)	0.5	UL	0.5	UJ	LCL	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	SGL	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DICHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DIMETHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L

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SP6227	SW8270D	T	SP6227-1	LORNG_OW24001_10262022_K	2,4-DINITROPHENOL	18	U	18	UJ	SGL	UG/L
					2-CHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7.1	U	7.1	UJ	SGL	UG/L
					2-NITROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	SGL	UG/L
					4-CHLORO-3-METHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					4-CHLOROANILINE	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					4-NITROPHENOL	18	U	18	UJ	SGL	UG/L
					BENZIDINE	35	UL	35	R	LCL, LCD	UG/L
					BENZOIC ACID	18	U	18	UJ	SGL	UG/L
					BENZYL ALCOHOL	14	U	14	UJ	SGL	UG/L
					CRESOLS, M & P	7.1	U	7.1	UJ	SGL	UG/L
					PHENOL	7.1	U	7.1	UJ	SGL	UG/L

Notes:

J = Concentration is estimated

U = Analyte not detected

UJ = Analyte not detected and considered estimated

R = Result is rejected

CBL = Continuing calibration blank concentration less than the reporting limit

CCL = Continuing calibration standard recovery less than lower control limit

EBG = Equipment blank concentration greater than the reporting limit

FDD = Field duplicate RPD criteria exceeded

HHL = Holding time exceeded

IAG = Ion abundance ratio outside calculated limits

ICD = Initial calibration relative standard deviation limit exceeded

ISL = Internal standard response less than the lower control limit

LBL = Laboratory blank contamination less than reporting limit

LBM = Laboratory blank contamination greater than reporting limit

LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded

LDD = Lab duplicate RPD criteria exceeded

LCL = LCS recovery less than lower control limit

MSD = Matrix spike (MS)/MSD RPD criteria exceeded

MSH = MS recovery greater than upper control limit

MSL = MS recovery less than lower control limit

RIS = Extracted internal standard recovery outside control limits

SGL = Surrogate recovery less than lower control limit

SGH = Surrogate recovery greater than the upper control limit

SVLL = Second source verification standard recovery less than lower control limit

TBL = Trip blank concentration less than the reporting limit

CFHD = Field sample/Split Sample RPD exceeds project limits

NG/L = nanogram per liter

UG/L = microgram per liter

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
200-64993	LORNG_MMW0124_09132022_E	LORNG_MMW0124_09132022FD_E	Perchlorate	PERCHLORATE (UG/L)	0.1	U M	0.072	J M	NC	
FA98677	LORNG_BW10006_09012022	LORNG_BW10006_09012022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	4.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	20	UJ	21	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.5	J	2.1	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.9	J	3.2	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2.1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.2	J	2.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.2	J	2.8	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	40.7		33.2		20	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.7		6.8		12	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2.1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	2.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	38.4		31.8		19	
				Perfluorooctanoic acid (PFOA) (NG/L)	9		7.4		20	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.1	J	2.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6		5.3		12	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2.1	U	NC	
	LORNG_OW10005_08312022	LORNG_OW10005_08312022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	20	U	19	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	7.1	J	7.5		5	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	8.7		8.2		6	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98677	LORNG_OW10005_08312022	LORNG_OW10005_08312022FD	PFAS	Perfluorohexanesulfonic acid (PFHxS) (NG/L)	23.4		21.8		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.5		7.5		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	9.3	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	31.3		32.3		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.7		7.2		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.8	J	4.2		10	
				Perfluoropentanoic acid (PFPeA) (NG/L)	13.5		12.5		8	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	1.9	U	NC	
	LORNG_OW14004_08312022	LORNG_OW14004_08312022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4	UJ	19	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5		5.6		11	
				Perfluorobutanoic acid (PFBA) (NG/L)	12.2		12.6	J	3	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	16.3		16.6		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	87.2		89.3		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	25		23.1		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	4.1		4.6		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	41.4		43.3		4	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	7.8		6.2		23	
				Perfluoropentanoic acid (PFPeA) (NG/L)	31.4		28.6		9	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	1.9	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98981	LORNG_MMW0010_09132022	LORNG_MMW0010_09132022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.9	J	3	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	6.7	J	7	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.5	J	1.7	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	9		9.1		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	47.3		49.2		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	14.6		14		4	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	70.5		67.5		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	12		12.6		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7		3.9		5	
				Perfluoropentanoic acid (PFPeA) (NG/L)	15.3		15.3		0	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
	LORNG_MMW0017_09132022	LORNG_MMW0017_09132022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	UJ	3.7	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.7		3.7		0	
				Perfluorobutanoic acid (PFBA) (NG/L)	7.3	J	7.5		3	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.1	J	2.1	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	11.1		11.2		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	63.2		64.6		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	19.3		19.7		2	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98981	LORNG_MMW0017_09132022	LORNG_MMW0017_09132022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.2	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.2	J	1.3	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	96.3		96.8		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	17.3		17.4		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.7		4.7		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	17		17.8		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
FA99047	LORNG_BSMW3S_09182022	LORNG_BSMW3S_09182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4.4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.2	J	3.6	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4.4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4.4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4.4	UJ	20	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4.4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	14.4		14.2		1	
				Perfluorobutanoic acid (PFBA) (NG/L)	35.3		34.6		2	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2.2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.2	U	1.1	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	6.4		7.8		20	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	46.9		48.7		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	368		384		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	71.4		72.8		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	12.5		14.4		14	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	36.9		41.7		12	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	404	J	585	J	**37**	**FDD**
				Perfluorooctanoic acid (PFOA) (NG/L)	102		105		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	25.3		24.7		2	
				Perfluoropentanoic acid (PFPeA) (NG/L)	58.9		61.8		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.2	U	2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99047	LORNG_JMW8011_09172022	LORNG_JMW8011_09172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	2.4	J	2.6	J	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	141		140		1	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	53.9		52		4	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	4	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	36.6		35.1		4	
				Perfluorobutanoic acid (PFBA) (NG/L)	51.4		50.6		2	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	J	1.9	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	39.5		39.8		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	106		104		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1410		1450		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	325		314		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	5.9		5.8		2	
				Perfluorononanoic acid (PFNA) (NG/L)	21		21		0	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	39.4		39.1		1	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2150		2170		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	322		323		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	56.9		54.7		4	
				Perfluoropentanoic acid (PFPeA) (NG/L)	157		152		3	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
	LORNG_JPZ1382_09172022	LORNG_JPZ1382_09172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	19	UJ	19	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.6	J	1.8	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99047	LORNG_JPZ1382_09172022	LORNG_JPZ1382_09172022FD	PFAS	Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2	J	2.1	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
FA99090	LORNG_AA07MW02_09202022	LORNG_AA07MW02_09202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	30.9		31.2		1	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	737	J	1030	J	**33**	**FDD**
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	121		117		3	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	37	UJ	37	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	99		101		2	
				Perfluorobutanoic acid (PFBA) (NG/L)	118		119		1	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.7	J	1.6	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	70.5		73.3		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	195		198		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1560		1760		12	
				Perfluorohexanoic acid (PFHxA) (NG/L)	509		516		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	5.6		4.7		17	
				Perfluorononanoic acid (PFNA) (NG/L)	22.5		23.5		4	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	64.3		67.3		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2610		2510		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	543		574		6	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	142		153		7	
				Perfluoropentanoic acid (PFPeA) (NG/L)	443		449		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
	LORNG_JBW7738A_09202022	LORNG_JBW7738A_09202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2.7	J	2.9	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	19	UJ	4	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	4	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99090	LORNG_JBW7738A_09202022	LORNG_JBW7738A_09202022FD	PFAS	Perfluorobutanesulfonic acid (PFBS) (NG/L)	15.6		15.6		0	
				Perfluorobutanoic acid (PFBA) (NG/L)	10.7		11.5		7	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.5		6.1		10	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	8.7		8.8		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	86.8		91.4		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	31.3		33.4		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	154		169		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	12.1		13		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	16.7		17.6		5	
				Perfluoropentanoic acid (PFPeA) (NG/L)	22.6		23.8		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	UJ	2	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
	LORNG_JMW0681_09192022	LORNG_JMW0681_09192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	UJ	3.7	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1	J	2.1	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.9	J	2.9	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.4	J	1.2	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15.5		14.5		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.5	J	2.3	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	10.1		9.8		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.1	J	2.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.4	J	2.3	J	NC	

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FA99090	LORNG_JMW0681_09192022	LORNG_JMW0681_09192022FD	PFAS	Perfluoropentanoic acid (PFPeA) (NG/L)	2.9	J	2.5	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
FA99400	LORNG_AA11MW02_09282022	LORNG_AA11MW02_09282022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2	J	1.8	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	UJ	3.6	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	15.1		14		8	
				Perfluorobutanoic acid (PFBA) (NG/L)	10.7		9.7		10	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	9		8.1		11	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	13.7		13.1		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	141		130		8	
				Perfluorohexanoic acid (PFHxA) (NG/L)	36.4		32.8		10	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	363		326		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	18.8		17.6		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	18.5		17.1		8	
				Perfluoropentanoic acid (PFPeA) (NG/L)	22.6		21.4		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
	LORNG_JMW0682_09282022	LORNG_JMW0682_09282022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	R	3.7	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.2	J	2.2	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.3	J	2.7	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99400	LORNG_JMW0682_09282022	LORNG_JMW0682_09282022FD	PFAS	Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	13.4		13.8		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.5	J	1.5	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	9.8		10.3		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	2	J	2.1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.1	J	2.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.7	J	1.8	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
	LORNG_JMW1665_09272022	LORNG_JMW1665_09272022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4.1	U	3.8	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	6.6	J	8		19	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4.1	U	3.8	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4.1	U	3.8	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4.1	UJ	19	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4.1	U	3.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.6	J	3.5	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	6.6	J	6.1	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.8		6.6		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	46.2		45.5		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	10.7		10		7	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	55.5		54.9		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.6		8.4		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.6		4.5		2	
				Perfluoropentanoic acid (PFPeA) (NG/L)	10.6		10.2		4	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	1.9	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99400	LORNG_JMW6001_09282022	LORNG_JMW6001_09282022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	33.4	J	57.8	J	**54**	**FDD**
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	UJ	19	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.2	J	4.2	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	J	2	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	3.9		3.2	J	20	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	5.6		5		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
	LORNG_JMW7913_09292022	LORNG_JMW7913_09292022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.8	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.8	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.8	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.8	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.6	UJ	3.8	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.6	U	3.8	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.8	U	1.9	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99400	LORNG_JMW7913_09292022	LORNG_JMW7913_09292022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.9	U	NC	
	LORNG_OW05004_09282022	LORNG_OW05004_09282022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	19.1		20.8		9	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	12.9		14.4		11	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	UJ	18	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	19.7		21		6	
				Perfluorobutanoic acid (PFBA) (NG/L)	50.5		54.2		7	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	15.3		15.4		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	134		144		7	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	351		376		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	82.8		88.8		7	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.5	J	2.8	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	11.9		12.5		5	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	J	1.8	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	634		679		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	85.8		91.8		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	35.2		36.8		4	
				Perfluoropentanoic acid (PFPeA) (NG/L)	137		147		7	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	

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FA99403	LORNG_BB_OW002_10012022	LORNG_BB_OW002_10012022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	19	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	U	19	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.6	U	19	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.9	UJ	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	9.3	UJ	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.4	J	1.4	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	UJ	9.3	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	9.3	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.9	UJ	NC	
	LORNG_BW01006_09302022	LORNG_BW01006_09302022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	U	18	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.7	J	2.9	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.6	J	2.7	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.93	J	0.99	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.6		3.9		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	38.7		39.7		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4		4.2		5	

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FA99403	LORNG_BW01006_09302022	LORNG_BW01006_09302022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	22.6		22.7		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.1		5.2		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3	J	3.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.9		4.1		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	8.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
	LORNG_BW18007_10012022	LORNG_BW18007_10012022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	UJ	18	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	3.2	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.1	J	3	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.7	J	2.7	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.3	J	1.2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.4	J	2.4	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	8.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA99403	LORNG_OW08001_09302022	LORNG_OW08001_09302022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	14		14.2		1	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	UJ	18	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	14.5		14.6		1	
				Perfluorobutanoic acid (PFBA) (NG/L)	26.4		26.8		2	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	10.1		10.3		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	36.2		36.9		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	314		319		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	87		87.7		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	3.7		3.6		3	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	4.6		5.2		12	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	324		333		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	89.6		92		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	21.8		21.8		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	89.7		90.5		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	8.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
	LORNG_WBGB_BW001_10012022	LORNG_WBGB_BW001_10012022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	18	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	UJ	18	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	1.8	J	2	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	UJ	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	8.9	UJ	8.9	UJ	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2	J	2.1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	6.3		6.7		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.4	J	3.4	J	NC	

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FA99403	LORNG_WBGB_BW001_10012022	LORNG_WBGB_BW001_10012022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	6.5		6.5		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.1	J	2.1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.4	J	1.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.3	J	3.2	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	8.9	UJ	8.9	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	8.9	UJ	8.9	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	8.9	UJ	NC	
SP5064	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,1-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/L)	0.024	UJ	0.024	UJ	NC	
					0.75	U	0.75	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/L)	0.024	UJ	0.024	UJ	NC	
					0.5	U	0.5	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				2,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				2-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				2-HEXANONE (UG/L)	2.5	U	2.5	U	NC	
				4-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				ACETONE (UG/L)	2.5	U	2.5	U	NC	
				BENZENE (UG/L)	0.5	U	0.5	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP5064	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	VOCs	BROMOBENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMODICHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMOFORM (UG/L)	0.5	U	0.5	U	NC	
				BROMOMETHANE (UG/L)	1	U	1	U	NC	
				CARBON DISULFIDE (UG/L)	0.5	U	0.5	U	NC	
				CARBON TETRACHLORIDE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROETHANE (UG/L)	1	U	1	U	NC	
				CHLOROFORM (UG/L)	0.5	U	0.5	U	NC	
				CHLOROMETHANE (UG/L)	1	U	1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/L)	0.5	U	0.5	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				CYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DICHLORODIFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				ETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	0.75	U	0.75	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/L)	0.5	U	0.5	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/L)	0.5	U	0.5	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/L)	1	U	1	U	NC	
				METHYL ACETATE (UG/L)	0.75	U	0.75	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYLCYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				METHYLENE CHLORIDE (UG/L)	2.5	U	2.5	U	NC	
				NAPHTHALENE (UG/L)	0.5	U	0.5	U	NC	
				N-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				N-PROPYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/L)	0.5	U	0.5	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/L)	0.5	U	0.5	U	NC	
				SEC-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				STYRENE (UG/L)	0.5	U	0.5	U	NC	
				T-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				TERT-BUTYL METHYL ETHER (UG/L)	0.5	U	0.5	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/L)	0.5	U	0.5	U	NC	
				TOLUENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP5064	LORNG_JBW7711_09012022_K	LORNG_JBW7711_09012022FD_K	VOCs	TRICHLOROETHYLENE (TCE) (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				VINYL ACETATE (UG/L)	0.5	U	0.5	U	NC	
				VINYL CHLORIDE (UG/L)	1	U	1	U	NC	
SP5209	LORNG_MMW0124_09132022_K	LORNG_MMW0124_09132022FD_K	SVOCs by SIM	1,4-DIOXANE (P-DIOXANE) (UG/L)	0.47	U	0.47	U	NC	
SP5537	LORNG_JBW7348_09282022_K	LORNG_JBW7348_09282022FD_K	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,1-TRICHLOROETHANE (UG/L)	26	J	0.5	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHANE (UG/L)	1.4	J	1.3		7	
				1,1-DICHLOROETHENE (UG/L)	3.5	J	2.8		22	
				1,1-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/L)	0.024	U	0.024	U	NC	
					0.75	U	0.75	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/L)	0.024	U	0.024	U	NC	
					0.5	U	0.5	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				2,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				2-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				2-HEXANONE (UG/L)	2.5	U	2.5	U	NC	
				4-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				ACETONE (UG/L)	2.5	U	2.5	U	NC	
				BENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOBENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMODICHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMOFORM (UG/L)	0.5	U	0.5	U	NC	

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SP5537	LORNG_JBW7348_09282022_K	LORNG_JBW7348_09282022FD_K	VOCs	BROMOMETHANE (UG/L)	1	U	1	U	NC	
				CARBON DISULFIDE (UG/L)	0.5	U	0.5	U	NC	
				CARBON TETRACHLORIDE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROETHANE (UG/L)	1	U	1	U	NC	
				CHLOROFORM (UG/L)	0.5	U	0.5	U	NC	
				CHLOROMETHANE (UG/L)	1	U	1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/L)	59	J	63		7	
				CIS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				CYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DICHLORODIFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				ETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	0.75	U	0.75	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/L)	0.5	U	0.5	UL	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/L)	0.5	U	0.5	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/L)	1	U	1	U	NC	
				METHYL ACETATE (UG/L)	0.75	U	0.75	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYLCYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				METHYLENE CHLORIDE (UG/L)	2.5	U	2.5	U	NC	
				NAPHTHALENE (UG/L)	0.5	U	0.5	U	NC	
				N-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				N-PROPYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/L)	0.5	U	0.5	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/L)	0.5	U	0.5	U	NC	
				SEC-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				STYRENE (UG/L)	0.5	U	0.5	U	NC	
				T-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				TERT-BUTYL METHYL ETHER (UG/L)	0.5	U	0.5	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/L)	0.5	U	0.4	J	NC	
				TOLUENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/L)	0.96	J	1.1		14	
				TRANS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/L)	280		270		4	
				TRICHLOROFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				VINYL ACETATE (UG/L)	0.5	U	0.5	U	NC	
				VINYL CHLORIDE (UG/L)	1.2	J	0.61	J	NC	

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SP5537	LORNG_JBW7737B_09282022_K	LORNG_JBW7737B_09282022FD_K	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,1-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/L)	0.024	U	0.024	U	NC	
					0.75	U	0.75	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/L)	0.024	U	0.024	U	NC	
					0.5	U	0.5	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				2,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				2-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				2-HEXANONE (UG/L)	2.5	U	2.5	U	NC	
				4-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				ACETONE (UG/L)	2.5	U	2.5	U	NC	
				BENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOBENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMODICHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMOFORM (UG/L)	0.5	U	0.5	U	NC	
				BROMOMETHANE (UG/L)	1	U	1	U	NC	
				CARBON DISULFIDE (UG/L)	0.5	U	0.5	U	NC	
				CARBON TETRACHLORIDE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROETHANE (UG/L)	1	U	1	U	NC	
				CHLOROFORM (UG/L)	0.5	U	0.5	U	NC	

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SP5537	LORNG_JBW7737B_09282022_K	LORNG_JBW7737B_09282022FD_K	VOCs	CHLOROMETHANE (UG/L)	1	U	1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/L)	0.27	J	0.5	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				CYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DICHLORODIFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				ETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	0.75	U	0.75	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/L)	0.5	U	0.5	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/L)	0.5	U	0.5	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/L)	1	U	1	U	NC	
				METHYL ACETATE (UG/L)	0.75	U	0.75	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYLCYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				METHYLENE CHLORIDE (UG/L)	2.5	U	2.5	U	NC	
				NAPHTHALENE (UG/L)	0.5	U	0.5	U	NC	
				N-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				N-PROPYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/L)	0.5	U	0.5	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/L)	0.5	U	0.5	U	NC	
				SEC-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				STYRENE (UG/L)	0.5	U	0.5	U	NC	
				T-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				TERT-BUTYL METHYL ETHER (UG/L)	0.5	U	0.5	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/L)	0.5	U	0.5	U	NC	
				TOLUENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				VINYL ACETATE (UG/L)	0.5	U	0.5	U	NC	
				VINYL CHLORIDE (UG/L)	1	U	1	U	NC	
SP5577	LORNG_BW01006_09302022_K	LORNG_BW01006_09302022FD_K	Metals	MANGANESE (UG/L)	3.1	J	1.6	J	NC	

Notes:
1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
FDD = field duplicate relative percent difference limit exceeded
NC = RPD not calculated; values less than LOQ
ng/L = nanograms per liter
RPD = relative percent difference

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SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations

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Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

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Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_OW12002_09012022	FA95936	2209096	4:2 Fluorotelomer sulfonate (4:2 FTS)	4	U	2.16	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	13.6		12.3		10
			8:2 Fluorotelomer sulfonate (8:2 FTS)	4	U	2.16	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	2.16	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	UJ	2.16	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	2.16	U	NC
			Perfluorobutanesulfonic acid (PFBS)	5.7		5.16		10
			Perfluorobutanoic acid (PFBA)	9		7.57		17
			Perfluorodecane sulfonate (PFDS)	2	U	2.16	U	NC
			Perfluorodecanoic acid (PFDA)	2	U	2.16	U	NC
			Perfluorododecanoic acid (PFDoA)	2	U	2.16	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	6.1		4.17	J	NC
			Perfluoroheptanoic acid (PFHpA)	11.5		9.88		15
			Perfluorohexanesulfonic acid (PFHxS)	98.1		76.7		24
			Perfluorohexanoic acid (PFHxA)	17.2		16.8		2
			Perfluorononanesulfonic acid (PFNS)	2	U	2.16	U	NC
			Perfluorononanoic acid (PFNA)	1.4	J	1.46	J	NC
			Perfluorooctane sulfonamide (PFOSA)	2	U	2.16	U	NC
			Perfluorooctanesulfonic acid (PFOS)	299		230		26
			Perfluorooctanoic acid (PFOA)	14.4		12.7		13
			Perfluoropentanesulfonic acid (PFPeS)	7.9		6.17		25
			Perfluoropentanoic acid (PFPeA)	21		18.8		11
			Perfluorotetradecanoic acid (PFTeDA)	2	U	2.16	U	NC
			Perfluorotridecanoic acid (PFTrDA)	2	U	2.16	U	NC
			Perfluoroundecanoic acid (PFUnA)	2	U	2.16	U	NC
LORNG_BW12005_09282022	FA99400	2210025	4:2 Fluorotelomer sulfonate (4:2 FTS)	7.1	J	6.16		14
			6:2 Fluorotelomer sulfonate (6:2 FTS)	198		192		3
			8:2 Fluorotelomer sulfonate (8:2 FTS)	40		35.4		12
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	2.01	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	2.01	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	2.01	U	NC
			Perfluorobutanesulfonic acid (PFBS)	150		125		18
			Perfluorobutanoic acid (PFBA)	56.5		56.1		1
			Perfluorodecane sulfonate (PFDS)	1.9	U	2.01	U	NC
			Perfluorodecanoic acid (PFDA)	1.9	U	2.01	U	NC
			Perfluorododecanoic acid (PFDoA)	1.9	U	2.01	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	94.5	J	65.6		36
			Perfluoroheptanoic acid (PFHpA)	60.2		52		15
			Perfluorohexanesulfonic acid (PFHxS)	800		729		9

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Checked By: GTD 10/19/22

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_BW12005_09282022	FA99400	2210025	Perfluorohexanoic acid (PFHxA)	366		318		14
			Perfluorononanesulfonic acid (PFNS)	1.9	U	2.01	U	NC
			Perfluorononanoic acid (PFNA)	2.1	J	1.77	J	NC
			Perfluorooctane sulfonamide (PFOSA)	7.7		4.8		46
			Perfluorooctanesulfonic acid (PFOS)	3410		2540		29
			Perfluorooctanoic acid (PFOA)	126		100		23
			Perfluoropentanesulfonic acid (PFPeS)	150		140		7
			Perfluoropentanoic acid (PFPeA)	137		143		4
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	2.01	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	2.01	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.9	U	2.01	U	NC
LORNG_BW16002_10012022	FA99403	2210025	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	1.88	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.6	U	1.88	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	1.88	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	1.88	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	1.88	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.6	U	1.88	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.88	U	NC
			Perfluorobutanoic acid (PFBA)	2.1	J	1.44	J	NC
			Perfluorodecane sulfonate (PFDS)	1.8	U	1.88	U	NC
			Perfluorodecanoic acid (PFDA)	1.8	U	1.88	U	NC
			Perfluorododecanoic acid (PFDoA)	1.8	U	1.88	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.8	U	1.88	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.8	U	1.88	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.11	J	NC
			Perfluorohexanoic acid (PFHxA)	1.3	J	1.22	J	NC
			Perfluorononanesulfonic acid (PFNS)	1.8	U	1.88	U	NC
			Perfluorononanoic acid (PFNA)	1.8	U	1.88	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.88	U	NC
			Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.88	U	NC
			Perfluorooctanoic acid (PFOA)	1.8	U	1.88	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.88	U	NC
			Perfluoropentanoic acid (PFPeA)	2	J	1.13	J	NC
			Perfluorotetradecanoic acid (PFTeDA)	8.9	UJ	1.88	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.88	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.8	U	1.88	U	NC
LORNG_OW17002_08162022SPLIT	FA99403	2208238	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	1.99	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.6	U	1.99	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	1.99	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	1.99	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	UJ	1.99	U	NC

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Checked By: GTD 10/19/22

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_OW17002_08162022SPLIT	FA99403	2208238	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.6	U	1.99	U	NC
			Perfluorobutanesulfonic acid (PFBS)	2.4	J	1.54	J	NC
			Perfluorobutanoic acid (PFBA)	26.3		12.3		73
			Perfluorodecane sulfonate (PFDS)	1.8	U	1.99	U	NC
			Perfluorodecanoic acid (PFDA)	1.8	U	1.99	U	NC
			Perfluorododecanoic acid (PFDoA)	8.9	UJ	1.99	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.8	U	1.99	U	NC
			Perfluoroheptanoic acid (PFHpA)	22.3		14.9		40
			Perfluorohexanesulfonic acid (PFHxS)	32.9		29.2		12
			Perfluorohexanoic acid (PFHxA)	30		18.4		48
			Perfluorononanesulfonic acid (PFNS)	1.8	U	1.99	U	NC
			Perfluorononanoic acid (PFNA)	1.3	J	1.99	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.37	J	NC
			Perfluorooctanesulfonic acid (PFOS)	42.5	J	32		28
			Perfluorooctanoic acid (PFOA)	12.6		9.24		31
			Perfluoropentanesulfonic acid (PFPeS)	3.1	J	1.67	J	NC
			Perfluoropentanoic acid (PFPeA)	70.3		33.5		71
			Perfluorotetradecanoic acid (PFTeDA)	8.9	U	1.99	U	NC
			Perfluorotridecanoic acid (PFTrDA)	8.9	UJ	1.99	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.8	U	1.99	U	NC

Notes:
No data qualifiers were applied to field sample results based on split sample comparison.
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group
ug/kg = micrograms per kilogram

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Checked By: GTD 10/19/22

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Lysimeter water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August and October 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida and Katahdin Analytical Services (KAS) in Scarborough, Maine, as summarized below.

SGS analyzed 16 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 16 samples for Total Organic Carbon (TOC) by Standard Method SM5310B.

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the PFAS and other chemistry data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries,

instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

HHL = Holding time exceeded
RIS = Extracted internal standard recovery outside control limits

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS
Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_LYS01007D_08232022
LORNG_LYS01007S_08222022
LORNG_LYS05012D_08232022
LORNG_LYS05012S_08232022
LORNG_LYS07007D_08222022
LORNG_LYS07007DDUP_08222022
LORNG_LYS07007S_08222022
LORNG_LYS07007SDUP_08222022

The non-detect results for perfluorotetradecanoic acid (PFTeDA) and perfluorooctane sulfonamide (PFOSA) in sample LORNG_LYS07007S_08222022 were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for PFTeDA and PFOSA in the affected sample are considered unusable for project objectives.

The non-detect result for PFOSA in sample LORNG_LYS01007D_08232022 was qualified as rejected (R) based on an extracted internal standard (EIS) percent recovery less than the DoD PFAS validation guideline limit of 20. The PFOSA result in the affected sample is considered unusable for project objectives.

PFAS detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for EIS recovery and/or method holding time exceedance. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for EIS recovery and/or method holding time exceedance. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 400 individual PFAS results reported for the lysimeter water sampling event, a total of 11 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a PFAS data completeness of 97.3% for the lysimeter water data set.

TOC

No data qualifications were required for TOC results. Of the 16 individual TOC results reported for the lysimeter water sampling event, no results were qualified as rejected. This represents a TOC data completeness of 100% for the lysimeter water sampling event.

Of the overall 416 individual results reported for the lysimeter water sampling event, 11 results were qualified as rejected. This represents an overall data completeness of 97.4% for the lysimeter water sampling event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

All results and reporting limits reported for sample LORNG_LYS07007D_08222022 were qualified as estimated (J/UJ) due to sample extraction after expiration of the method holding time.

2.1.2 Extracted Internal Standard Recovery

EIS percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

The non-detect results for N-MeFOSA in the following samples were rejected (R) based on EIS percent recoveries less than 20:

LORNG_LYS01007D_08232022
LORNG_LYS01007S_08222022
LORNG_LYS05012D_08232022
LORNG_LYS05012S_08232022
LORNG_LYS07007D_08222022
LORNG_LYS07007DDUP_08222022
LORNG_LYS07007S_08222022
LORNG_LYS07007SDUP_08222022

Non-detect results for PFOSA in samples LORNG_LYS01007D_08232022 and LORNG_LYS07007S_08222022 were qualified as rejected (R) based on EIS percent recoveries less than 20.

The non-detect result for PFTeDA in sample LORNG_LYS07007S_08222022 was qualified as rejected (R) based on an EIS percent recovery less than 20.

Results for 6:2 fluorotelomer sulfonic acid (6:2 FTS) in the following samples were qualified as estimated (J) based on EIS percent recoveries less than 50 in the initial runs of the associated samples:

LORNG_LYS07007D_08222022
LORNG_LYS07007DDUP_08222022
LORNG_LYS07007D_10032022
LORNG_LYS07007DDUP_10032022
LORNG_LYS07007SDUP_10032022

The result for 8:2 fluorotelomer sulfonic acid (8:2 FTS) in sample LORNG_LYS07007S_08222022 was qualified as estimated (J) based on an EIS percent recovery less than 50.

Reporting limits for N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) in samples LORNG_LYS05012S_08232022, LORNG_LYS07007S_08222022, and LORNG_LYS07007SDUP_08222022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for N-MeFOSA in samples LORNG_LYS01007D_10032022, LORNG_LYS01007S_10032022, and LORNG_LYS07007D_10032022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) in samples LORNG_LYS07007DDUP_08222022 and LORNG_LYS07007S_08222022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The results for perfluorobutanoic acid (PFBA) in samples LORNG_LYS01007S_08222022, LORNG_LYS05012S_08232022, and LORNG_LYS07007S_08222022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

Results for perfluorodecanoic acid (PFDA) and perfluoroheptanoic acid (PFHpA) in sample LORNG_LYS07007S_08222022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

The reporting limit for perfluorodecane sulfonate (PFDS) in sample LORNG_LYS05012S_10032022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

The reporting limit for perfluoroundecanoic acid (PFUNA) in sample LORNG_LYS07007S_08222022 was qualified as estimated (UJ) based on EIS percent recovery less than 50.

The reporting limits for perfluorododecanoic acid (PFDOA) in samples LORNG_LYS01007S_08222022, LORNG_LYS07007S_08222022, and LORNG_LYS07007SDUP_08222022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The results for perfluoroheptane sulfonic acid (PFHpS) in samples LORNG_LYS01007S_10032022 and LORNG_LYS05012S_10032022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

The result for perfluorohexanesulfonic acid (PFHxS) in sample LORNG_LYS01007S_10032022 was qualified as estimated (J) based on an EIS percent recovery less than 50.

Results for perfluorononanesulfonic acid (PFNS) and perfluorononanoic acid (PFNA) in sample LORNG_LYS05012S_10032022 were qualified as estimated (J) based on an EIS percent recovery less than 50.

Reporting limits for PFOSA in samples LORNG_LYS07007D_08222022 and LORNG_LYS07007DDUP_08222022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The result for PFOSA in sample LORNG_LYS01007S_10032022 was qualified as estimated (J) based on an EIS percent recovery less than 50.

Reporting limits for perfluorotetradecanoic acid (PFTeDA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_LYS01007D_08232022
LORNG_LYS01007S_08222022
LORNG_LYS07007D_08222022
LORNG_LYS07007SDUP_08222022
LORNG_LYS01007S_10032022

Reporting limits for perfluorotridecanoic acid (PFTrDA) in samples LORNG_LYS01007S_08222022, LORNG_LYS07007S_08222022, and LORNG_LYS07007SDUP_08222022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

2.2 TOC

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



December 6, 2022

Reviewed by: Julie Ricardi



January 25, 2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem
						Analysis Method	M537	A5310B
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA98398	LYS01007D	LORNG_LYS01007D_08232022	FA98398-1	8/23/2022	WI	N	25	
	LYS01007S	LORNG_LYS01007S_08222022	FA98398-2	8/22/2022	WI	N	25	
	LYS05012D	LORNG_LYS05012D_08232022	FA98398-3	8/23/2022	WI	N	25	
	LYS05012S	LORNG_LYS05012S_08232022	FA98398-4	8/23/2022	WI	N	25	
	LYS07007D	LORNG_LYS07007D_08222022	FA98398-5	8/22/2022	WI	N	25	
	LYS07007DDUP	LORNG_LYS07007DDUP_08222022	FA98398-6	8/22/2022	WI	N	25	
	LYS07007S	LORNG_LYS07007S_08222022	FA98398-7	8/23/2022	WI	N	25	
	LYS07007SDUP	LORNG_LYS07007SDUP_08222022	FA98398-8	8/23/2022	WI	N	25	
FA99481	LYS01007D	LORNG_LYS01007D_10032022	FA99481-1	10/3/2022	WI	N	25	
	LYS01007S	LORNG_LYS01007S_10032022	FA99481-2	10/3/2022	WI	N	25	
	LYS05012D	LORNG_LYS05012D_10032022	FA99481-3	10/3/2022	WI	N	25	
	LYS05012S	LORNG_LYS05012S_10032022	FA99481-4	10/3/2022	WI	N	25	
	LYS07007D	LORNG_LYS07007D_10032022	FA99481-5	10/3/2022	WI	N	25	
	LYS07007DDUP	LORNG_LYS07007DDUP_10032022	FA99481-6	10/3/2022	WI	N	25	
	LYS07007S	LORNG_LYS07007S_10032022	FA99481-7	10/3/2022	WI	N	25	
	LYS07007SDUP	LORNG_LYS07007SDUP_10032022	FA99481-8	10/3/2022	WI	N	25	
SP4666	LYS01007D	LORNG_LYS01007D_08232022_K	SP4666-1	8/23/2022	WI	N		1
	LYS01007S	LORNG_LYS01007S_08222022_K	SP4666-2	8/22/2022	WI	N		1
	LYS05012D	LORNG_LYS05012D_08232022_K	SP4666-3	8/23/2022	WI	N		1
	LYS05012S	LORNG_LYS05012S_08232022_K	SP4666-4	8/23/2022	WI	N		1
	LYS07007D	LORNG_LYS07007D_08222022_K	SP4666-5	8/22/2022	WI	N		1
	LYS07007DDUP	LORNG_LYS07007DDUP_08222022_K	SP4666-6	8/22/2022	WI	N		1
	LYS07007S	LORNG_LYS07007S_08232022_K	SP4666-7	8/23/2022	WI	N		1
	LYS07007SDUP	LORNG_LYS07007SDUP_08232022_K	SP4666-8	8/23/2022	WI	N		1
SP5605	LYS01007D	LORNG_LYS01007D_10032022_K	SP5605-1	10/3/2022	WI	N		1
	LYS01007S	LORNG_LYS01007S_10032022_K	SP5605-2	10/3/2022	WI	N		1
	LYS05012D	LORNG_LYS05012D_10032022_K	SP5605-3	10/3/2022	WI	N		1
	LYS05012S	LORNG_LYS05012S_10032022_K	SP5605-4	10/3/2022	WI	N		1
	LYS07007D	LORNG_LYS07007D_10032022_K	SP5605-5	10/3/2022	WI	N		1
	LYS07007DDUP	LORNG_LYS07007DDUP_10032022_K	SP5605-6	10/3/2022	WI	N		1
	LYS07007S	LORNG_LYS07007S_10032022_K	SP5605-7	10/3/2022	WI	N		1
	LYS07007SDUP	LORNG_LYS07007SDUP_10032022_K	SP5605-8	10/3/2022	WI	N		1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WI = Lysimeter Water, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/7/22
Checked by: CLC
Date: 12/7/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA98398							
		Location		LYS01007D	LYS01007S	LYS05012D	LYS05012S	LYS07007D	LYS07007DDUP	LYS07007S	LYS07007SDUP
		Sample Date		8/23/2022	8/22/2022	8/23/2022	8/23/2022	8/22/2022	8/22/2022	8/23/2022	8/23/2022
		Sample ID		LORNG_LYS01007D_08232022	LORNG_LYS01007S_08222022	LORNG_LYS05012D_08232022	LORNG_LYS05012S_08232022	LORNG_LYS07007D_08222022	LORNG_LYS07007DDUP_08222022	LORNG_LYS07007S_08222022	LORNG_LYS07007SDUP_08222022
		QC Code		N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8 U	37 U	15.7	20.9 J	20.7 J	79.2	30.5 J	25.5 J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	31.3	40.6	488	723	1,250 J	2,220 J	748	605
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2.6 J	2.4 J	168	519	38 UJ	103	2.1 J	20.7 J
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	38 U	37 U	37 U	75 UJ	38 UJ	19 U	20 UJ	370 UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	38 R	37 R	37 R	75 R	38 R	19 R	20 R	74 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8 U	3.7 U	3.7 U	19 U	38 UJ	19 UJ	20 UJ	19 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	45.9	184	371	274	457 J	1,190	541	240
		Perfluorobutanoic acid (PFBA)	NG/L	99.2	358 J	276	216 J	121 J	602	282 J	371
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	9.4 U	19 UJ	9.4 U	10 U	9.3 U
		Perfluorodecanoic acid (PFDA)	NG/L	2.6 J	2.2 J	2.6 J	9.4 U	19 UJ	17 J	1.4 J	9.3 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	37 UJ	1.9 U	9.4 U	19 UJ	9.4 U	2 UJ	9.3 UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	47.3	81.4	141	319	127 J	1,350	126	321
		Perfluoroheptanoic acid (PFHpA)	NG/L	119	407	355	588	262 J	979	358 J	374
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1,750	5,060	3,170	2,870	6,280 J	14,500	5,800	2,190
		Perfluorohexanoic acid (PFHxA)	NG/L	283	1,250	972	908	543 J	1,900	779	683
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	19 U	2.6 J	38 U	19 UJ	8.6 J	10 U	37 U
		Perfluorononanoic acid (PFNA)	NG/L	37.7	44.7	24	33	29.3 J	238	27.4	102
		Perfluorooctane sulfonamide (PFOSA)	NG/L	19 R	19 U	81.9	63.7 J	19 UJ	9.4 UJ	10 R	37 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1,660	2,680	2,800	15,200	2,680 J	11,300	2,170	10,100
		Perfluorooctanoic acid (PFOA)	NG/L	316	1,000	520	862	527 J	2,000	536	371
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	57.9	250	443	389	709 J	1,770	784	354
		Perfluoropentanoic acid (PFPeA)	NG/L	155	738	571	985	524 J	2,110	852	1,170
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 UJ	37 UJ	1.9 U	9.4 U	19 UJ	9.4 U	2 R	9.3 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	37 UJ	1.9 U	9.4 U	19 UJ	9.4 U	2 UJ	9.3 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.7 J	1.9 U	1.9 U	9.4 U	19 UJ	9.4 U	2 UJ	9.3 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample result is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/7/22
Checked by: CLC
Date: 12/7/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA99481							
		Location		LYS01007D	LYS01007S	LYS05012D	LYS05012S	LYS07007D	LYS07007DDUP	LYS07007S	LYS07007SDUP
		Sample Date		10/3/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022	10/3/2022
		Sample ID		LORNG_LYS01007D_10032022	LORNG_LYS01007S_10032022	LORNG_LYS05012D_10032022	LORNG_LYS05012S_10032022	LORNG_LYS07007D_10032022	LORNG_LYS07007DDUP_10032022	LORNG_LYS07007S_10032022	LORNG_LYS07007SDUP_10032022
		QC Code		N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	71 U	29.1	3.6 U	62.4 J	251	42.6	76.2
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	27.2	40.8	913	47.1	2,050 J	14,200 J	1,040	1,760 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	1.9 J	92.8	104	80 U	64.6 J	3.6 U	8.2
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	80 U	71 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	36 UJ	71 UJ	71 U	71 U	80 UJ	71 U	71 U	71 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	80 U	71 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	120	258	783	791	1,240	4,710	1,010	575
		Perfluorobutanoic acid (PFBA)	NG/L	104	328	474	390	335	1,190	1,160	873
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 UJ	40 U	36 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	3.6	3.9	1.4 J	1.3 J	40 U	36 U	1.8 U	1.1 J
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	40 U	36 U	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	35.3	123 J	209	43.8 J	272	4,530	145	278
		Perfluoroheptanoic acid (PFHpA)	NG/L	138	470	653	1,990	740	3,330	1,360	1,020
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1,940	4,610 J	5,810	2,290	8,680	42,200	6,000	6,670
		Perfluorohexanoic acid (PFHxA)	NG/L	355	1,560	2,120	1,530	1,580	6,130	2,820	2,560
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.8 J	1.8 U	6.5	9.2 J	40 U	26 J	1.8 U	2.5 J
		Perfluorononanoic acid (PFNA)	NG/L	40.5	82.9	30.2	7.9 J	71.4 J	355	20.3	50.3
		Perfluorooctane sulfonamide (PFOSA)	NG/L	9.6 J	5.3 J	35.3 J	28.1 J	40 U	36 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2,610	4,560	1,590	5,210	5,050	25,700	2,120	5,360
		Perfluorooctanoic acid (PFOA)	NG/L	320	1,300	749	1,170	1,500	6,270	761	724
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	68.2	296	901	320	1,960	5,960	1,480	905
		Perfluoropentanoic acid (PFPeA)	NG/L	181	800	1,280	2,650	1,420	5,440	4,000	3,230
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	36 UJ	1.8 U	1.8 U	40 U	36 U	36 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	40 U	36 U	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.4 J	1.8 U	1.8 U	1.8 U	40 U	36 U	1.8 U	1.8 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
U = Analyte not detected at the associated detection lim
UJ = Analyte not detected and considered estimated
R = Sample result is considered unusable for project obj
NG/L = nanograms per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/7/22
Checked by: CLC
Date: 12/7/2022

Table 2 - Summary of non-PFAS Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4666													
			Location	LYS01007D		LYS01007S		LYS05012D		LYS05012S		LYS07007D		LYS07007DDUP		LYS07007S		LYS07007SDUP	
			Sample Date	8/23/2022		8/22/2022		8/23/2022		8/23/2022		8/22/2022		8/22/2022		8/23/2022		8/23/2022	
			Sample ID	LORNG_LYS01007D_08232022_K		LORNG_LYS01007S_08222022_K		LORNG_LYS05012D_08232022_K		LORNG_LYS05012S_08232022_K		LORNG_LYS07007D_08222022_K		LORNG_LYS07007DDUP_08222022_K		LORNG_LYS07007S_08232022_K		LORNG_LYS07007SDUP_08232022_K	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/L	12		19		7.4		5.5		63		18		58		18	

Notes:
N = Normal Field Sample
MG/L = milligram per liter

Prepared by: AKN
Date: 12/7/22
Checked by: CLC
Date:12/7/22

Table 2 - Summary of non-PFAS Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP5605													
			Location	LYS01007D		LYS01007S		LYS05012D		LYS05012S		LYS07007D		LYS07007DDUP		LYS07007S		LYS07007SDUP	
			Sample Date	10/3/2022		10/3/2022		10/3/2022		10/3/2022		10/3/2022		10/3/2022		10/3/2022		10/3/2022	
			Sample ID	LORNG_LYS01007D_10032022_K		LORNG_LYS01007S_10032022_K		LORNG_LYS05012D_10032022_K		LORNG_LYS05012S_10032022_K		LORNG_LYS07007D_10032022_K		LORNG_LYS07007DDUP_10032022_K		LORNG_LYS07007S_10032022_K		LORNG_LYS07007SDUP_10032022_K	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/L	6.7		6.4		5.6		6		15		23		8		7.7	

Notes:
N = Normal Field Sample
MG/L = milligram per liter

Prepared by: AKN
Date: 12/7/22
Checked by:CLC
Date: 12/7/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98398	M537	T	FA98398-1	LORNG_LYS01007D_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	38	U	38	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	19	U	19	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
			FA98398-2	LORNG_LYS01007S_08222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	358	=	358	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	37	U	37	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	37	U	37	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	37	U	37	UJ	RIS	NG/L
			FA98398-3	LORNG_LYS05012D_08232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	R	RIS	NG/L
			FA98398-4	LORNG_LYS05012S_08232022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	75	U	75	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	75	U	75	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	216	=	216	J	RIS	NG/L
			FA98398-5	LORNG_LYS07007D_08222022	4:2 Fluorotelomer sulfonate (4:2 FTS)	20.7	J	20.7	J	HHL	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	1,250	=	1,250	J	HHL, RIS	NG/L
					8:2 Fluorotelomer sulfonate (8:2 FTS)	38	U	38	UJ	HHL	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	38	U	38	UJ	HHL	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	38	U	38	R	HHL, RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	38	U	38	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	457	=	457	J	HHL	NG/L
					Perfluorobutanoic acid (PFBA)	121	=	121	J	HHL	NG/L
					Perfluorodecane sulfonate (PFDS)	19	U	19	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	19	U	19	UJ	HHL	NG/L
FA98398	M537	T	FA98398-5	LORNG_LYS07007D_08222022	Perfluorododecanoic acid (PFDoA)	19	U	19	UJ	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	127	=	127	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	262	=	262	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	6,280	=	6,280	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	543	=	543	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	19	U	19	UJ	HHL	NG/L
					Perfluorononanoic acid (PFNA)	29.3	J	29.3	J	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	19	U	19	UJ	HHL, RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2,680	=	2,680	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	527	=	527	J	HHL	NG/L

Prepared by:AKN
Date:12/7/22
Checked by: CLC
Date: 12/7/2022

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98398	M537	T	FA98398-5	LORNG_LYS07007D_08222022	Perfluoropentanesulfonic acid (PFPeS)	709	=	709	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	524	=	524	J	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	19	U	19	UJ	HHL, RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	19	U	19	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	19	U	19	UJ	HHL	NG/L
			FA98398-6	LORNG_LYS07007DDUP_08222022	6:2 Fluorotelomer sulfonate (6:2 FTS)	2,220	=	2,220	J	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	19	U	19	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.4	U	9.4	UJ	RIS	NG/L
			FA98398-7	LORNG_LYS07007S_08222022	8:2 Fluorotelomer sulfonate (8:2 FTS)	2.1	J	2.1	J	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	20	U	20	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	20	U	20	UJ	RIS	NG/L
FA98398	M537	T	FA98398-7	LORNG_LYS07007S_08222022	Perfluorobutanoic acid (PFBA)	282	=	282	J	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.4	J	1.4	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	358	=	358	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	UJ	RIS	NG/L
			FA98398-8	LORNG_LYS07007SDUP_08222022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	370	U	370	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	74	U	74	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	9.3	U	9.3	UJ	RIS	NG/L
FA99481	M537	T	FA99481-1	LORNG_LYS01007D_10032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	36	U	36	UJ	RIS	NG/L
			FA99481-2	LORNG_LYS01007S_10032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	71	U	71	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	123	=	123	J	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	4,610	=	4,610	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	5.3	=	5.3	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	36	U	36	UJ	RIS	NG/L

Prepared by:AKN
Date:12/7/22
Checked by: CLC
Date: 12/7/2022

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA99481	M537	T	FA99481-4	LORNG_LYS05012S_10032022	Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	43.8	=	43.8	J	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	9.2	=	9.2	J	RIS	NG/L
					Perfluorononanoic acid (PFNA)	7.9	=	7.9	J	RIS	NG/L
			FA99481-5	LORNG_LYS07007D_10032022	6:2 Fluorotelomer sulfonate (6:2 FTS)	2,050	=	2,050	J	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	80	U	80	UJ	RIS	NG/L
			FA99481-6	LORNG_LYS07007DDUP_10032022	6:2 Fluorotelomer sulfonate (6:2 FTS)	14,200	=	14,200	J	RIS	NG/L
			FA99481-8	LORNG_LYS07007SDUP_10032022	6:2 Fluorotelomer sulfonate (6:2 FTS)	1,760	=	1,760	J	RIS	NG/L

Notes:
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample result is considered unusable for project objectives
HHL = Holding time exceeded
RIS = Extracted internal standard recovery outside control limits
NG/L = nanograms per liter

Prepared by:AKN
Date:12/7/22
Checked by: CLC
Date: 12/7/2022

Table 4 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - October 2022 Lysimeter Water Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August – September 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 244 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 31 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Method 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polynuclear Aromatic Hydrocarbons (PAHs) and Select SVOCs (Pentachlorophenol and 1,4-Dioxane) by SW846 Methods 8270C Selected Ion Monitoring (SIM) and 8270D SIM
- Pesticides by SW846 Method 8081B
- Polychlorinated Biphenyls (PCBs) by SW846 Method 8082A
- Metals by SW846 Methods 6010C and 7470B
- Perchlorate (subcontracted to Eurofins Test America Laboratory (TAL) in South Burlington, Vermont) by SW846 Method 6850
- Total Organic Carbon (TOC) by Lloyd Kahn/9060A
- Percent Solids by SM2540G and ASTM D2216

Split samples were submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as an interlaboratory comparison assessment sample. Vista analyzed samples for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a). An evaluation of split sample results is presented in Section 2.1.5.

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations

- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the PFAS and other chemistry data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of raw data and calculation checks, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of a subset of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018) and USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CCL = Continuing calibration standard recovery less than lower control limit
CFD = Dual column RPD criteria exceeded
DS = Serial dilution percent difference exceeded control limit
FDD = Field duplicate RPD criteria exceeded
ICD = Initial calibration RSD exceeded
ISL = Internal standard response less than lower control limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCH = LCS recovery greater than upper control limit
LCL = LCS recovery less than lower control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
PDSL = post digestion spike (PDS) recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
SGL = Surrogate recovery less than lower control limit
SVLL = Second source verification standard recovery less than lower control limit
TBL = Trip blank concentration less than reporting limit

Interlaboratory split samples were submitted to Vista as an additional quality assurance step. Data validation was not planned for Vista data unless gross deviations were observed. No gross deviations were observed. Results are presented in this report to complete the interlaboratory comparison only and are not included in the final data set of the Loring RI sampling program and not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QPP. A summary of data validation qualifications and interpretations on data usability are provided in this section. More detailed discussions are provided in Section 2.0.

An error was made in the field and the wrong location was initially assigned to samples LORNG_SB14007_0-1_08172022 and LORNG_SB14007_8-10_08172022. Subsequently the locations were changed from SB14006 to SB14007 and a request to revise the data package was submitted to the lab on 1/4/2023.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for MS/MSD recovery, field duplicate precision, and extracted internal standard (EIS) recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as estimated values.

The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

The split samples analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets. Split sample results are presented in Table 6 and discussed in Section 2.1.5.

A total of 34 PFAS field duplicates were collected from soil locations during the sampling period. Perfluorooctanesulfonic acid (PFOS) was the primary compound detected. There were detections in 17 pairs where RPDs were calculated, and 15 of 17 field duplicate pairs met the project RPD precision goal of ≤ 50 indicating that good precision was met for PFAS in the soil media. Field duplicate results are summarized on Table 4. Field duplicate results within QPP project limits were reported for PFAS compounds with the following exceptions:

- The results for PFOS in samples LORNG_SB01015_8-10_08082022 and LORNG_SB01015_8-10_08082022FD are qualified estimated due to RPDs that exceed project limits.
- The results for 6:2 fluorotelomer sulfonate (6:2FTS), perfluorohexane sulfonic acid (PFHxS), and PFOS in samples LORNG_SB05016_0-1_08052022 and associated field duplicate LORNG_SB05016_0-1_08052022FD are qualified estimated due to RPDs that exceed project limits.

Recoveries within QSM and QPP project limits were reported for PFAS compounds in most MS/MSD analyses indicating accuracy goals were achieved in the soil media with the following exceptions:

- The result for PFOS in sample LORNG_SB06006_7.5-8.5_80222 is qualified estimated due to a high recovery and RPD exceedance in the associated MS/MSD.
- The result for PFOS in sample LORNG_SB01006_8-10_08042022 is qualified estimated due to a high recovery in the associated MS/MSD.
- The result for PFOS in sample LORNG_SB05025_0-1_08172022 is qualified estimated due to a low recovery in the associated MS/MSD.
- The result for PFOS in sample LORNG_SB01017_0-1_09142022 is qualified estimated due to a high recovery in the associated MS.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on EIS recovery. In accordance with QSM and QPP objectives EIS recovery limits are 50-150 percent. Target compound results and reporting limits associated with recoveries less than 50 percent are qualified estimated. Non-detect results associated with recoveries less than 20 percent are qualified rejected. Affected samples and associated qualified results are summarized in Table 3 with code RIS. Results qualified estimated (J/UJ) are considered usable as estimated values. Results qualified rejected (R) are considered unusable. The target compound N-methyl perfluorooctane sulfonamide (N-MeFOSA) in sample LORNG_SB13025_0-1_08172022 was the only rejected PFAS result.

Of the 6,100 individual PFAS results reported for the soil event, one result was qualified as rejected. This represents an overall data completeness of 99% for the soil event.

Sample results for non-PFAS methods were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for instrument calibration, LCS recovery and precision, MS/MSD recovery and precision, field duplicate precision, surrogate recovery, internal standard response, dual column confirmation differences, post digestion spike recovery, and/or serial dilution differences. Low concentration detections in some samples are qualified due to detections in associated blanks in accordance with validation guidelines. Affected samples and associated qualified results and validation action reason codes are summarized in Table 3. Results are considered usable as estimated values. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Benzidine is considered rejected (R) in a subset of the samples due to the compound not being recovered in the initial calibration verification (ICV) standard. Results are summarized on Table 3.

Results for total organic carbon in samples LORNG_SB20009_0-1_08082022_K and LORNG_SB20009_0-1_08082022FD_K are considered estimated due to an RPD that exceeds project limits. No impact on data usability was identified.

Of the 9,498 individual results reported for the soil event, five results were qualified as rejected. This represents an overall data completeness of 99% for the soil event.

Analytical results are reported using laboratory detection limits that are defined in the QPP. These include the LOQ, LOD, and DL. Project Action Limits (PALs) are also identified in the QPP for analytes with established screening levels, guidance values, or standards. In the QPP PALs for a subset of VOCs, SVOCs, and metals are identified as less than the DL reported by the laboratory. Analytical results for these target analytes are reported to the lowest achievable detection limit provided by the analytical method.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
  Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times

* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
  Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.1.1 Data Completeness and COC Review

An error was made in the field and the wrong location was initially assigned to samples LORNG_SB14007_0-1_08172022 and LORNG_SB14007_8-10_08172022. Subsequently the locations were changed from SB14006 to SB14007 and a request to revise the data package was submitted to the lab on 1/4/2023.

2.1.2 MS/MSD

The percent recovery of perfluorooctanesulfonic acid (PFOS)[141] in the MS/MSD associated with sample LORNG_SB06006_7.5-8.5_80222 was greater than the upper QC acceptance limits. The MS/MSD RPD (38) exceeded the QC acceptance limit for PFOS. The result for PFOS in sample LORNG_SB06006_7.5-8.5_80222 was qualified as estimated (J).

The percent recovery of PFOS (156) in the MS/MSD associated with sample LORNG_SB01006_8-10_08042022 was greater than the upper QC acceptance limits. The result for PFOS in sample LORNG_SB01006_8-10_08042022 was qualified as estimated (J).

The percent recovery of PFOS in the MS/MSD associated with sample LORNG_SB05025_0-1_08172022 (38) was less than the lower QC acceptance limits (38). The result for PFOS in sample LORNG_SB05025_0-1_08172022 was qualified as estimated (J).

The percent recovery of PFOS (151) in the MS associated with sample LORNG_SB01017_0-1_09142022 greater than the QC acceptance limits. The result for PFOS in sample LORNG_SB01017_0-1_09142022 was qualified as estimated (J).

2.1.3 Field Duplicates

The field duplicate RPD for PFOS (85) in sample LORNG_SB01015_8-10_08082022 and its associated field duplicate LORNG_SB01015_8-10_08082022FD exceeded the project limit of 50. The results for PFOS in samples LORNG_SB01015_8-10_08082022 and LORNG_SB01015_8-10_08082022FD were qualified as estimated (J).

The field duplicate RPD for 6:2FTS (118), 8:2 fluorotelomer sulfonate (8:2FTS) (121), perfluorohexane sulfonic acid (PFHxS) (108), and perfluorooctane sulfonic acid (PFOS) (133) between sample LORNG_SB05016_0-1_08052022 and its associated field duplicate LORNG_SB05016_0-1_08052022FD exceeded QC limits. The results for 6:2FTS, 8:2FTS, PFHxS, and PFOS in the associated samples were qualified as estimated (J).

2.1.4 Extracted Internal Standard Recovery

The EIS percent recovery associated with N-MeFOSA (39) in sample LORNG_SB06006_0-1_08022022 was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB06006_0-1_08022022 and the reporting limit was qualified as estimated (UJ).

The EIS percent recovery associated with N-MeFOSAA (42) in sample LORNG_SB01006_0-1_08042022 was less than the lower QC acceptance limit of 50. N-MeFOSA was detected in sample LORNG_SB01006_0-1_08042022 and the result was qualified as estimated (J).

The EIS percent recoveries associated with N-MeFOSAA (40-41) and N-ethyl perfluorooctancesulfonamidoacetic acid (N-EtFOSAA) (42-43) in samples LORNG_SB01006_8-10_08042022 and LORNG_SB13021_0-1_08032022 were less than the lower QC acceptance limit of 50. N-MeFOSAA and Et-FOSAA were not detected in samples LORNG_SB01006_8-10_08042022 and LORNG_SB13021_0-1_08032022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB17008_13-15_08042022 (30) and LORNG_SB05018_0-1_08042022FD (48) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SB17008_13-15_08042022 and LORNG_SB05018_0-1_08042022FD and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA (42) and perfluorooctane sulfonamide (PFOSA) (44) in sample LORNG_SB17008_8-10_08042022 were less than the lower QC acceptance limit of 50. N-MeFOSA and PFOSA were not detected in sample LORNG_SB17008_8-10_08042022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB01015_0-1_08082022 (46) and LORNG_SB01015_0-1_08082022FD (47) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SB01015_0-1_08082022 and LORNG_SB01015_0-1_08082022FD were and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA (34-39) and PFOSA (33-45) in samples LORNG_SB22004_0-1_08052022 and LORNG_SB22004_8-10_08052022 were less than the lower QC acceptance limit of 50. N-MeFOSA and PFOSA were not detected in sample LORNG_SB22004_0-1_08052022 and LORNG_SB22004_8-10_08052022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB22004_13-15_08052022 (37) and LORNG_SB22004_8-10_08052022FD (45) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB22004_13-15_08052022 and LORNG_SB22004_8-10_08052022FD and the reporting limits were qualified as estimated (UJ).

The EIS percent recovery associated with N-MeFOSA (45) in sample LORNG_SB07018_8-10_08202022FD was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB07018_8-10_08202022FD and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA (36) and PFOSA (41) in sample LORNG_SB07018_8-10_08202022 were less than the lower QC acceptance limit of 50. N-MeFOSA and PFOSA were not detected in sample LORNG_SB07018_8-10_08202022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB01022_0-1_08162022 (47) and LORNG_SB20013_6-7_08162022 (45) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SB01022_0-1_08162022 and LORNG_SB20013_6-7_08162022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA (42) and PFOSA (47) in sample LORNG_SB13026_0-1_08172022 were less than the lower QC acceptance limit of 50. N-MeFOSA and PFOSA were not detected in sample LORNG_SB13026_0-1_08172022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recovery associated with PFOSA (34) in sample LORNG_SB13025_0-1_08172022 was less than the lower QC acceptance limit of 50. The EIS percent recovery associated with N-MeFOSA (19) in sample LORNG_SB13025_0-1_08172022 was below the lower rejectable limit of 20. PFOSA was not detected in sample LORNG_SB13025_0-1_08172022 and the reporting limits were qualified as estimated (UJ). N-MeFOSA was not detected in sample LORNG_SB13025_0-1_08172022 and the reporting limit was qualified as rejected (R).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB12015_0-1_08182022 (44), LORNG_SB12016_8-10_08182022 (49), and LORNG_SB12017_0-1_08182022FD (49) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SB12015_0-1_08182022, LORNG_SB12016_8-10_08182022, and LORNG_SB12017_0-1_08182022FD and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA (24-45) and N-EtFOSAA (30-46) in a subset of samples in SDG FA98980 were less than the lower QC acceptance limit of 50. N-MeFOSA and N-EtFOSAA were not detected in the subset of samples and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB19006_0-1_09132022 (42) and LORNG_SB05026_0-1_09132022 (43) were less than the lower QC

acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SB19006_0-1_09132022 and LORNG_SB05026_0-1_09132022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (48) in sample LORNG_SB01028_0-1_09142022 was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB01028_0-1_09142022 and the reporting limit was qualified as estimated (UJ).

2.1.5 Interlaboratory Split Samples

Interlaboratory split samples were collected in association with the following soil samples:

LORNG_SB01015_8-10_080822
LORNG_SB01015_11.5-13.5_80822
LORNG_SB01026_0-1_08162022
LORNG_SB20010_7-8_08162022
LORNG_SB12015_0-1_08182022
LORNG_SB12016_8-10_08182022
LORNG_SB07019_0-1_08192022

A summary of split sample results is presented on Table 6. Comparison criteria are established in QPP Appendix E. The majority of PFAS target compounds were not detected in either sample. PFOS was detected in 6 of 7 samples and reported at similar concentrations by both laboratories in all samples. Results for 6 of 7 split samples met comparison criteria. The PFOS result in one sample (LORNG_SB01015_8-10_08082022) had PFOS reported by SGS at 9.4 µg/kg and reported by Vista Laboratory at 5.17 µg/kg, with an RPD of 58, which slightly exceeds the project goal of 50. The result reported by SGS was previously qualified estimated (J) based on field duplicate precision, with the associated field duplicate result reported at 3.8 µg/kg. No data qualifier was applied to the PFOS result for sample LORNG_SB01015_8-10_08082022 based on the split sample RPD. Other PFAS compounds were detected in several split samples at concentrations <LOQ with results showing general agreement at the trace detections reported. The split sample results analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets.

2.2 VOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* Initial Calibration
* Continuing Calibration

* LCS
* MS/MSD
  Field Duplicates
  Surrogate
  Internal Standards
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.2.1 QC Blanks

Trip blank LORNG_TB13_08092022 had a detection of toluene below the LOQ (3.6 µg/kg). Toluene was detected at a concentration below the LOQ in sample LORNG_SB24003_8-10_08082022FDK and the result was qualified as non-detect (U) at the LOD.

2.2.2 Field Duplicates

The result for acetone in sample LORNG_SB05016_0-1_08052022_K and its associated field duplicate LORNG_SB05016_0-1_08052022FD_K were qualified as estimated (UJ/J) due to inconsistent results.

2.2.3 Surrogates

The percent recovery of surrogate 4-bromofluorobenzene (76) in sample LORNG_SB05016_0-1_08052022FD_K was less than the lower acceptance limit. All results in sample LORNG_SB05016_0-1_08052022FD_K were qualified as estimated (UJ/J) with code SGL.

2.2.4 Internal Standards

The response of internal standard 1,4-dichlorobenzene-d4 in sample LORNG_SB05016_0-1_08052022FD_K was less than the lower acceptance limit. The results for associated target compounds in sample LORNG_SB05016_0-1_08052022FD_K were qualified as estimated (UJ/J) with code ISL.

2.3 SVOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning

Initial Calibration
Continuing Calibration
LCS
* MS/MSD
* Field Duplicates
Surrogate
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.3.1 Initial/Continuing Calibration

The initial calibration RSD for 4-nitrophenol (22) associated with all field samples in SDG SP4213 was outside of QC acceptance limits. 4-nitrophenol was not detected in the associated samples and reporting limits were qualified as estimated (UJ).

The percent recoveries of multiple parameters (50 -74) in the initial calibration verifications (ICVs) associated with all field samples in SDG SP4213 were below the lower QC acceptance limit, indicating potential low bias. The parameters were not detected in the associated samples and the reporting limits were qualified as estimated (UJ). The percent recovery of benzidine in the ICVs were less than the lower rejectable limit (0). Benzidine was not detected in the associated samples the reporting limits were qualified as rejected (R).

The percent differences of multiple parameters in the continuing calibration verifications (CCVs) associated with all field samples in SDG SP4213 exceeded the QC acceptance limit indicating potential low bias. The parameters were not detected in the associated samples and the reporting limits were qualified as estimated (J/UJ).

Results qualified for calibration are summarized on Table 3 with code CCL and ICD.

2.3.2 LCS

The percent recovery of benzaldehyde (790/496) in the LCS/LCSD associated with sample LORNG_SB06006_0-1_08022022_K was above the upper QC limit, indicating high bias. The LCS/LCSD RPD is outside of the acceptance criteria (46). Benzaldehyde was detected in sample LORNG_SB06006_0-1_08022022_K and the result was qualified as estimated (J) with code LCH and LCD.

The LCS/LCSD RPD for bis-(2-ethylhexyl) phthalate associated with LORNG_SB06006_0-1_08022022_K sample is outside of the acceptance criteria (24). Bis-(2-ethylhexyl) phthalate was detected in sample LORNG_SB06006_0-1_08022022_K and the result was qualified as estimated (J) with code LCD.

The percent recovery of benzaldehyde (790/496) in the LCS/LCSD associated with all field samples in SDG SP4245 recovered above the upper QC limit, indicating high bias. The LCS/LCSD RPD is outside of the acceptance criteria (46). The detections of benzaldehyde in the associated samples were qualified as estimated (J).

The LCS/LCSD RPD for bis-(2-ethylhexyl) phthalate associated with samples LORNG_SB07015_0-1_08042022_K and LORNG_SB12009_8-10_08042022_K was outside of the acceptance criteria (24). Bis-(2-ethylhexyl) phthalate was detected in samples LORNG_SB07015_0-1_08042022_K and LORNG_SB12009_8-10_08042022_K and the results were qualified as estimated (J).

The percent recovery of benzaldehyde (790/496) in the LCS/LCSD associated with samples LORNG_SB05016_0-1_08052022_K and LORNG_SB05016_0-1_08052022FD_K recovered above the upper QC limit, indicating high bias. The LCS/LCSD RPD is outside of the acceptance criteria (46). The detections of benzaldehyde in samples LORNG_SB05016_0-1_08052022_K and LORNG_SB05016_0-1_08052022FD_K were qualified as estimated (J).

The percent recovery of benzaldehyde (790/496) in the LCS/LCSD associated with sample LORNG_SB24003_0-1_08082022_K recovered above the upper QC limit, indicating high bias. The LCS/LCSD RPD is outside of the acceptance criteria (46). The detections of benzaldehyde in sample LORNG_SB24003_0-1_08082022_K was qualified as estimated (J).

Results qualified for LCS recovery and RPD are summarized on Table 3 with code LCL and LCD.

2.3.3 Surrogates

The surrogate recoveries for multiple base-extractable surrogates associated with sample LORNG_SB10010_8-10_08022022_K (31 – 49.9) were less than lower control limits, indicating low bias. The results for all SVOCs in the base/neutral fractions of sample LORNG_SB10010_8-10_08022022_K were qualified as estimated (UJ).

The surrogate recoveries for multiple based-extracted surrogates associated with sample LORNG_SB01006_8-10_08042022_K (30 – 39) were less than lower control limits, indicating low bias. The results for all SVOCs in the base/neutral fractions of sample LORNG_SB01006_8-10_08042022_K were qualified as estimated (UJ).

The surrogate recoveries for multiple surrogates associated with sample LORNG_SB24003_8-10_08082022FDK were less than lower control limits, indicating low bias. Reporting limits for all SVOCs in the base/neutral extractable fraction of sample LORNG_SB24003_8-10_08082022FDK were qualified as estimated (UJ).

Results qualified for low surrogate recovery are summarized on Table 3 with code SGL.

2.4 PAHs and Select SVOCs by SIM

Data were evaluated based on the following parameters:

* Lab Report Narrative

* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
  Initial Calibration
* Continuing Calibration
  LCS
* MS/MSD
* Field Duplicates
* Surrogate
  Internal Standards
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were metfor this parameter.

2.4.1 Initial Calibration

The percent recovery of pentachlorophenol (67) in the initial calibration verification (ICV) associated with all field samples in SDG SP4213 was below the lower QC acceptance limit, indicating potential low bias. Pentachlorophenol not detected in the associated samples and the reporting limits were qualified as estimated (UJ) with code SVLL.

2.4.2 LCS

The LCS/LCSD RPD for fluorene (22) associated with sample LORNG_SB06006_0-1_08022022_K is outside of the acceptance criteria of 20. Fluorene was detected in sample LORNG_SB06006_0-1_08022022_K and the result was qualified as estimated (J).

The percent recoveries of pyrene (52) and benzo(k)fluoranthene (54) in the LCS/LCSD associated with all field samples in SDG SP4245 recovered below the lower QC limit, indicating low bias. The results for pyrene and benzo(k)fluoranthene in the associated samples were qualified as estimated (UJ/J).

Results qualified for LCS recovery and RPD are summarized on Table 3 with code LCL and LCD.

2.4.3 Internal Standards

The internal standard response for multiple internal standards associated with samples LORNG_SB06006_0-1_08022022_K and LORNG_SB10010_8-10_08022022_K were less than lower control limits. The results for subsets of parameters in samples LORNG_SB06006_0-1_08022022_K and LORNG_SB10010_8-10_08022022_K were qualified as estimated (J/UJ) with code ISL.

2.5 Pesticides

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance
* Initial Calibration
  Continuing Calibration
* LCS
* MS/MSD
  Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
  Dual column RPD
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.5.1 Continuing Calibration

The percent difference of toxaphene in the continuing calibration verifications (CCVs) associated with sample LORNG_SB06006_0-1_08022022_K was outside the QC acceptance limit indicating potential low bias. Toxaphene was not detected in the associated sample and the reporting limit was qualified as estimated (UJ).

The percent difference of methoxyclor in the continuing calibration verifications (CCVs) associated with sample L LORNG_SB06006_7.5-8.5_8022022K wasoutside the QC acceptance limit indicating potential low bias. Methoxyclor was not detected in the associated sample and the reporting limit was qualified as estimated (UJ).

Results qualified for CCVs are listed on Table 3 with code CCL.

2.5.2 Field Duplicates

The results for 4,4'-DDD (95), 4,4'-DDE (65), and 4,4'-DDT (73) in sample LORNG_SB05016_0-1_08052022_K and its associated field duplicate LORNG_SB05016_0-1_08052022FD_K were qualified as estimated (J) due to RPDs that exceeded project control limits with code FDD.

2.5.3 Dual Column RPD

The dual column RPD for 4-4'-DDD (80) in sample LORNG_SB06006_0-1_08022022_K exceeded the method limit of 40. The detection of 4-4'-DDD in sample LORNG_SB06006_0-1_08022022_K was qualified as estimated (J).

The dual column RPD for 4-4'-DDD (92) in sample LORNG_SB01006_0-1_08042022_K exceeded the method limit. The detection of 4-4'-DDD in sample LORNG_SB01006_0-1_08042022_K was qualified as estimated (J).

The dual column RPDs for 4-4'-DDD (132), beta endosulfan (107), endrin aldehyde (92), and endrin ketone (140) in sample LORNG_SB07015_0-1_08042022_K exceeded the method limit. The detections of 4-4'-DDD, beta endosulfan, endrin aldehyde, and endrin ketone in sample LORNG_SB07015_0-1_08042022_K were qualified as estimated (J).

Results qualified for dual column evaluations are summarized on Table 3 with code CFD.

2.6 PCBs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance
* Initial Calibration
  Continuing Calibration
* LCS
* MS/MSD
* Field Duplicates
  Surrogate
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.6.1 Continuing Calibration

The percent recovery of Aroclor-1016 in the CCVs associated with samples LORNG_SB06006_0-1_08022022_K and LORNG_SB06006_7.5-8.5_8022022K were below the lower QC acceptance limit, indicating potential low bias. Aroclor-1016, Aroclor-1221, Aroclor-1232, and Aroclor-142

were not detected in the associated samples and the reporting limits were qualified as estimated (UJ) with code CCL.

2.6.2 Surrogates

The surrogate recovery for multiple surrogates associated with sample LORNG_SB06006_7.5-8.5_8022022K (40, 47) were less than lower control limits indicating low bias. All parameters in sample LORNG_SB06006_7.5-8.5_8022022K were qualified as estimated (UJ).

The surrogate recovery for the surrogate decachlorobiphenyl (58) in sample LORNG_SB07015_8-10_08042022_K is less than the lower control limit indicating low bias. The results for all parameters in sample LORNG_SB07015_8-10_08042022_K were qualified as estimated (UJ).

The percent recovery of the surrogate decachlorobiphenyl (57) associated with sample LORNG_SB05016_0-1_08052022_K was less than the lower acceptance limit. All results in sample LORNG_SB05016_0-1_08052022_K were qualified as estimated (UJ/J).

Results qualified for low surrogate recovery are summarized on Table 3 with code SGL.

2.7 Metals

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance
* Initial Calibration
* Continuing Calibration
* LCS
  MS/MSD
  Post Digestion Spike
  Serial Dilution
* Field Duplicates
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Total/Dissolved Solids
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.7.1 QC Blanks

The method blank associated with all field samples in SDG SP4213 had a detection of sodium (5.7 mg/kg) below the LOQ. The detections of sodium in samples LORNG_SB06006_0-1_08022022_K, LORNG_SB06006_7.5-8.5_8022022K, LORNG_SB10010_0-1_08022022_K, and LORNG_SB10010_8-10_08022022_K were less than the LOQ and qualified as not detected (U) at the reported concentrations.

The method blank associated with all field samples in SDG SP4245 had a detection of sodium (5.7 mg/kg) below the LOQ. The detections of sodium in samples LORNG_SB01006_0-1_08042022_K and LORNG_SB07015_8-10_08042022_K were less than the LOD and qualified as not detected (U) at the LOD. The detections of sodium in samples LORNG_SB01006_8-10_08042022_K, LORNG_SB07015_0-1_08042022_K, LORNG_SB12009_0-1_08042022_K, and LORNG_SB12009_8-10_08042022_K were less than the LOQ and qualified as not detected (U) at the reported concentrations.

The method blank associated with sample LORNG_SB24003_0-1_08082022_K had a detection of sodium (3.3 mg/kg) below the LOQ. The detections of sodium in sample LORNG_SB24003_0-1_08082022_K was less than the LOQ and qualified as not detected (U) at the reported concentration.

The method blank associated with samples LORNG_SB24003_8-10_08082022_K and LORNG_SB24003_8-10_08082022FDK had a detection of sodium (6.6 mg/kg) below the LOQ. The detections of sodium in samples LORNG_SB24003_8-10_08082022_K and LORNG_SB24003_8-10_08082022FDK were less than the LOQ and less than ten times the blank contamination. The sodium results were qualified as not detected (U) at the reported concentration.

2.7.2 MS/MSD

The percent recovery of antimony (21/25), chromium (66), and nickel (81) in the MS/MSD associated with sample LORNG_SB10010_0-1_08022022_K were less than the lower QC limits, indicating low bias. The MS/MSD RPDs for antimony (30) and calcium (92) were above of the acceptance criteria. Antimony, chromium, calcium, and nickel were detected in sample LORNG_SB10010_0-1_08022022_K and the results were qualified as estimated (J).

The percent recovery of potassium (151) in the MS/MSD associated with sample LORNG_SB10010_0-1_08022022_K exceeded the upper QC limits, indicating high bias. The MS/MSD RPD for potassium (26) was outside of the acceptance criteria. Potassium was detected in sample LORNG_SB10010_0-1_08022022_K and the result was qualified as estimated (J).

The MS/MSD RPD for calcium (26) associated with sample LORNG_SB10010_0-1_08022022_K was above the acceptance criteria. Calcium was detected in sample LORNG_SB10010_0-1_08022022_K and the result was qualified as estimated (J).

Results qualified for spike recovery or RPD are summarized on Table 3 with code MSL, MSH, and MSD.

2.7.3 Post Digestion Spike

The percent recoveries of aluminum (25) and magnesium (67) in the post digestion spike associated with sample LORNG_SB10010_0-1_08022022_K were less than the lower QC limits indicating low bias. Aluminum and magnesium were detected in sample LORNG_SB10010_0-1_08022022_K and the results were qualified as estimated (J) with code PDSL.

2.7.4 Serial Dilution

The percent difference for lead (11) and zinc (12) in the serial dilution associated with sample LORNG_SB10010_0-1_08022022_K exceed QC limits. The results for lead and zinc in sample LORNG_SB10010_0-1_08022022_K were qualified as estimated (J) with code DS.

2.8 Perchlorate

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance
* Initial Calibration
* Continuing Calibration
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

No data quality issues were identified and results are interpreted to be usable as reported by the laboratory.

2.9 Total Organic Carbon

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times

* QC Blanks
* Initial Calibration
* Continuing Calibration
* LCS
* MS/MSD
  Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks

* QC criteria were met for this parameter.

2.9.1 Field Duplicates

The result for total organic carbon in sample LORNG_SB20009_0-1_08082022_K and its associated field duplicate LORNG_SB20009_0-1_08082022FD_K were qualified as estimated (J) with code FDD due to the field duplicate RPD (53) exceeding QC limits.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Amber Jones



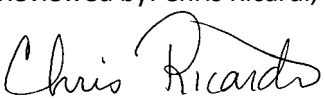
December 14, 2022

Reviewed by: Julie Ricardi



December 15, 2022

Reviewed by: Chris Ricardi, NRCC-EAC



December 16, 2022

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
200-64482	SB06006	LORNG_SB06006_0-1_08022022_E	200-64482-1	8/2/2022	SO	N										1	
		LORNG_SB06006_7.5-8.5_8022022E	200-64482-2	8/2/2022	SO	N										1	
200-64483	SB01006	LORNG_SB01006_0-1_08042022_E	200-64483-1	8/4/2022	SO	N										1	
		LORNG_SB01006_8-10_08042022_E	200-64483-2	8/4/2022	SO	N										1	
	SB12009	LORNG_SB12009_0-1_08042022_E	200-64483-3	8/4/2022	SO	N										1	
		LORNG_SB12009_8-10_08042022_E	200-64483-4	8/4/2022	SO	N										1	
FA97849	FIELDQC	LORNG_EB137_08022022	FA97849-1	8/2/2022	WQ	EB	25										
		LORNG_EB138_08032022	FA97849-2	8/3/2022	WQ	EB	25										
	SB06006	LORNG_SB06006_0-1_08022022	FA97849-3	8/2/2022	SO	N	25										
		LORNG_SB06006_7.5-8.5_80222	FA97849-4	8/2/2022	SO	N	25										
	SB06008	LORNG_SB06008_0-1_08022022	FA97849-5	8/2/2022	SO	N	25										
		LORNG_SB06008_6-6.5_08022022	FA97849-6	8/2/2022	SO	N	25										
	SB10010	LORNG_SB10010_0-1_08022022	FA97849-7	8/2/2022	SO	N	25										
		LORNG_SB10010_18-20_08022022	FA97849-8	8/2/2022	SO	N	25										
		LORNG_SB10010_8-10_08022022	FA97849-9	8/2/2022	SO	N	25										
	SB14006	LORNG_SB14006_1-2_08022022	FA97849-10	8/2/2022	SO	N	25										
		LORNG_SB14006_6-8_08022022	FA97849-11	8/2/2022	SO	N	25										
FA97888	SB01006	LORNG_SB01006_0-1_08042022	FA97888-13	8/4/2022	SO	N	25										
		LORNG_SB01006_8-10_08042022	FA97888-14	8/4/2022	SO	N	25										
	SB08007	LORNG_SB08007_0-1_08032022	FA97888-1	8/3/2022	SO	N	25										
		LORNG_SB08007_8-10_08032022	FA97888-2	8/3/2022	SO	N	25										
	SB09004	LORNG_SB09004_0-1_08032022	FA97888-3	8/3/2022	SO	N	25										
		LORNG_SB09004_13-15_08032022	FA97888-4	8/3/2022	SO	N	25										
		LORNG_SB09004_8-10_08032022	FA97888-5	8/3/2022	SO	N	25										
	SB11004	LORNG_SB11004_0-1_08032022	FA97888-6	8/3/2022	SO	N	25										
		LORNG_SB11004_11-13_08032022	FA97888-7	8/3/2022	SO	N	25										
		LORNG_SB11004_8-10_08032022	FA97888-8	8/3/2022	SO	N	25										
	SB13021	LORNG_SB13021_0-1_08032022	FA97888-9	8/3/2022	SO	N	25										
		LORNG_SB13021_7-9_08032022	FA97888-10	8/3/2022	SO	N	25										
	SB13022	LORNG_SB13022_0-1_08032022	FA97888-11	8/3/2022	SO	N	25										
		LORNG_SB13022_6-8_08032022	FA97888-12	8/3/2022	SO	N	25										
	SB16015	LORNG_SB16015_0-1_08032022	FA97888-15	8/3/2022	SO	N	25										
		LORNG_SB16015_12-14_08032022	FA97888-16	8/3/2022	SO	N	25										
		LORNG_SB16015_8-10_08032022	FA97888-17	8/3/2022	SO	N	25										
	SB18027	LORNG_SB18027_0-1_08052022	FA97923-1	8/5/2022	SO	N	25										
		LORNG_SB18027_8-10_08052022	FA97923-2	8/5/2022	SO	N	25										
	SB18028	LORNG_SB18028_0-1_08052022	FA97923-3	8/5/2022	SO	N	25										
		LORNG_SB18028_8-10_08052022	FA97923-4	8/5/2022	SO	N	25										

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA97923	SB18029	LORNG_SB18029_0-1_08052022	FA97923-5	8/5/2022	SO	N	25										
		LORNG_SB18029_0-1_08052022FD	FA97923-6	8/5/2022	SO	FD	25										
		LORNG_SB18029_12-14_08052022	FA97923-7	8/5/2022	SO	N	25										
		LORNG_SB18029_12-14_08052022FD	FA97923-8	8/5/2022	SO	FD	25										
		LORNG_SB18029_8-10_08052022	FA97923-9	8/5/2022	SO	N	25										
FA97926	FIELDQC	LORNG_EB129_08042022	FA97926-12	8/4/2022	WQ	EB	25										
	SB05018	LORNG_SB05018_0-1_08042022	FA97926-1	8/4/2022	SO	N	25										
		LORNG_SB05018_0-1_08042022FD	FA97926-2	8/4/2022	SO	FD	25										
		LORNG_SB05018_8-10_08042022	FA97926-3	8/4/2022	SO	N	25										
	SB07015	LORNG_SB07015_0-1_08042022	FA97926-4	8/4/2022	SO	N	25										
		LORNG_SB07015_8-10_08042022	FA97926-5	8/4/2022	SO	N	25										
	SB12009	LORNG_SB12009_0-1_08042022	FA97926-6	8/4/2022	SO	N	25										
		LORNG_SB12009_13-15_08042022	FA97926-7	8/4/2022	SO	N	25										
		LORNG_SB12009_8-10_08042022	FA97926-8	8/4/2022	SO	N	25										
	SB17008	LORNG_SB17008_0-1_08042022	FA97926-9	8/4/2022	SO	N	25										
		LORNG_SB17008_13-15_08042022	FA97926-10	8/4/2022	SO	N	25										
		LORNG_SB17008_8-10_08042022	FA97926-11	8/4/2022	SO	N	25										
FA97959	FIELDQC	LORNG_EB220_08052022	FA97959-1	8/5/2022	WQ	EB	25										
		LORNG_EB221_08052022	FA97959-2	8/5/2022	WQ	EB	25										
	SB05016	LORNG_SB05016_0-1_08052022	FA97959-3	8/5/2022	SO	N	25										
		LORNG_SB05016_0-1_08052022FD	FA97959-4	8/5/2022	SO	FD	25										
		LORNG_SB05016_5-7_08052022	FA97959-5	8/5/2022	SO	N	25										
	SB22004	LORNG_SB22004_0-1_08052022	FA97959-6	8/5/2022	SO	N	25										
		LORNG_SB22004_13-15_08052022	FA97959-7	8/5/2022	SO	N	25										
		LORNG_SB22004_13-15_080522FD	FA97959-8	8/5/2022	SO	FD	25										
		LORNG_SB22004_8-10_08052022	FA97959-9	8/5/2022	SO	N	25										
		LORNG_SB22004_8-10_08052022FD	FA97959-10	8/5/2022	SO	FD	25										
FA98012	FIELDQC	LORNG_EB130_08082022	FA98012-1	8/8/2022	WQ	EB	25										
	SB01015	LORNG_SB01015_0-1_08082022	FA98012-2	8/8/2022	SO	N	25										
		LORNG_SB01015_0-1_08082022FD	FA98012-3	8/8/2022	SO	FD	25										
		LORNG_SB01015_11.5-13.5_8822	FA98012-4	8/8/2022	SO	N	25										
		LORNG_SB01015_11.5-13.5_8822FD	FA98012-5	8/8/2022	SO	FD	25										
		LORNG_SB01015_8-10_08082022	FA98012-6	8/8/2022	SO	N	25										
		LORNG_SB01015_8-10_08082022FD	FA98012-7	8/8/2022	SO	FD	25										

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Former Loring Air Force Base, Limestone, Maine

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						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98012	SB20009	LORNG_SB20009_0-1_08082022	FA98012-8	8/8/2022	SO	N	25										
		LORNG_SB20009_0-1_08082022FD	FA98012-9	8/8/2022	SO	FD	25										
		LORNG_SB20009_13-15_08082022	FA98012-10	8/8/2022	SO	N	25										
		LORNG_SB20009_13-15_08082022FD	FA98012-11	8/8/2022	SO	FD	25										
		LORNG_SB20009_8-10_08082022	FA98012-12	8/8/2022	SO	N	25										
		LORNG_SB20009_8-10_08082022FD	FA98012-13	8/8/2022	SO	FD	25										
	SB24003	LORNG_SB24003_0-1_08082022	FA98012-14	8/8/2022	SO	N	25										
		LORNG_SB24003_11.5-13.5_8822	FA98012-15	8/8/2022	SO	N	25										
		LORNG_SB24003_11.5-13.5_8822FD	FA98012-16	8/8/2022	SO	FD	25										
		LORNG_SB24003_8-10_08082022	FA98012-17	8/8/2022	SO	N	25										
		LORNG_SB24003_8-10_08082022FD	FA98012-18	8/8/2022	SO	FD	25										
FA98221	BW22001	LORNG_BW22001_18-20_08162022	FA98221-10	8/16/2022	SO	N	25										
	FIELDQC	LORNG_EB222_08162022	FA98221-1	8/16/2022	WQ	EB	25										
		LORNG_EB223_08172022	FA98221-19	8/17/2022	WQ	EB	25										
		LORNG_EB224_08162022	FA98221-20	8/16/2022	WQ	EB	25										
		LORNG_EB225_08172022	FA98221-21	8/17/2022	WQ	EB	25										
	SB01019	LORNG_SB01019_0-1_08162022	FA98221-2	8/16/2022	SO	N	25										
		LORNG_SB01019_0-1_08162022FD	FA98221-3	8/16/2022	SO	FD	25										
		LORNG_SB01019_8-10_08162022	FA98221-4	8/16/2022	SO	N	25										
	SB01020	LORNG_SB01020_0-1_08162022	FA98221-5	8/16/2022	SO	N	25										
		LORNG_SB01020_8-10_08162022	FA98221-6	8/16/2022	SO	N	25										
	SB01022	LORNG_SB01022_0-1_08162022	FA98221-11	8/16/2022	SO	N	25										
		LORNG_SB01022_8-10_08162022	FA98221-12	8/16/2022	SO	N	25										
	SB01025	LORNG_SB01025_0-1_08162022	FA98221-22	8/16/2022	SO	N	25										
		LORNG_SB01025_8-10_08162022	FA98221-23	8/16/2022	SO	N	25										
		LORNG_SB01025_8-10_08162022FD	FA98221-24	8/16/2022	SO	FD	25										
	SB01026	LORNG_SB01026_0-1_08162022	FA98221-13	8/16/2022	SO	N	25										
		LORNG_SB01026_8-10_08162022	FA98221-14	8/16/2022	SO	N	25										
	SB20010	LORNG_SB20010_0-1_08162022	FA98221-7	8/16/2022	SO	N	25										
		LORNG_SB20010_7-8_08162022	FA98221-8	8/16/2022	SO	N	25										
	SB20011	LORNG_SB20011_0-1_08162022	FA98221-15	8/16/2022	SO	N	25										
		LORNG_SB20011_7-8_08162022	FA98221-16	8/16/2022	SO	N	25										
	SB20012	LORNG_SB20012_0-1_08162022	FA98221-9	8/16/2022	SO	N	25										
		LORNG_SB20012_7-8_08162022	FA98221-17	8/16/2022	SO	N	25										
	SB20013	LORNG_SB20013_0-1_08162022	FA98221-25	8/16/2022	SO	N	25										
		LORNG_SB20013_6-7_08162022	FA98221-26	8/16/2022	SO	N	25										
		LORNG_SB20014_0-1_08162022	FA98221-18	8/16/2022	SO	N	25										

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							Method Class	PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
							Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
							Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
	SB20014	LORNG_SB20014_7-8_08162022	FA98221-27	8/16/2022	SO	N		25										
		LORNG_SB20014_7-8_08162022FD	FA98221-28	8/16/2022	SO	FD		25										
FA98256	SB05021	LORNG_SB05021_0-1_08172022	FA98256-1	8/17/2022	SO	N		25										
		LORNG_SB05021_0-1_08172022FD	FA98256-2	8/17/2022	SO	FD		25										
		LORNG_SB05021_7-8_08172022	FA98256-3	8/17/2022	SO	N		25										
	SB05022	LORNG_SB05022_0-1_08172022	FA98256-4	8/17/2022	SO	N		25										
		LORNG_SB05022_8-9_08172022	FA98256-13	8/17/2022	SO	N		25										
	SB05023	LORNG_SB05023_0-1_08172022	FA98256-14	8/17/2022	SO	N		25										
		LORNG_SB05023_7-8_08172022	FA98256-15	8/17/2022	SO	N		25										
		LORNG_SB05023_7-8_08172022FD	FA98256-16	8/17/2022	SO	FD		25										
	SB05028	LORNG_SB05028_0-1_08172022	FA98256-5	8/17/2022	SO	N		25										
		LORNG_SB05028_0-1_08172022FD	FA98256-6	8/17/2022	SO	FD		25										
		LORNG_SB05028_7-8_08172022	FA98256-7	8/17/2022	SO	N		25										
	SB05029	LORNG_SB05029_0-1_08172022	FA98256-23	8/17/2022	SO	N		25										
		LORNG_SB05029_7-8_08172022	FA98256-24	8/17/2022	SO	N		25										
	SB10011	LORNG_SB10011_0-1_08172022	FA98256-8	8/17/2022	SO	N		25										
		LORNG_SB10011_8-10_08172022	FA98256-9	8/17/2022	SO	N		25										
	SB10012	LORNG_SB10012_0-1_08172022	FA98256-25	8/17/2022	SO	N		25										
		LORNG_SB10012_8-10_08172022	FA98256-26	8/17/2022	SO	N		25										
	SB10013	LORNG_SB10013_1-2_08172022	FA98256-17	8/17/2022	SO	N		25										
		LORNG_SB10013_8-10_08172022	FA98256-18	8/17/2022	SO	N		25										
	SB13025	LORNG_SB13025_0-1_08172022	FA98256-10	8/17/2022	SO	N		25										
		LORNG_SB13025_8-10_08172022	FA98256-19	8/17/2022	SO	N		25										
	SB13026	LORNG_SB13026_0-1_08172022	FA98256-20	8/17/2022	SO	N		25										
		LORNG_SB13026_8-10_08172022	FA98256-21	8/17/2022	SO	N		25										
		LORNG_SB13026_8-10_08172022FD	FA98256-22	8/17/2022	SO	FD		25										
	SB14006	LORNG_SB14007_0-1_08172022	FA98256-11	8/17/2022	SO	N		25										
		LORNG_SB14007_8-10_08172022	FA98256-12	8/17/2022	SO	N		25										

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							PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98280	FIELDQC	LORNG_EB226_08182022	FA98280-1	8/18/2022	WQ	EB	25										
		LORNG_EB227_08182022	FA98280-2	8/18/2022	WQ	EB	25										
		LORNG_EB228_08182022	FA98280-3	8/18/2022	WQ	EB	25										
	SB05024	LORNG_SB05024_0-1_08172022	FA98280-4	8/17/2022	SO	N	25										
		LORNG_SB05024_7-8_08172022	FA98280-5	8/17/2022	SO	N	25										
	SB05025	LORNG_SB05025_0-1_08172022	FA98280-6	8/17/2022	SO	N	25										
		LORNG_SB05025_8-9_08172022	FA98280-7	8/17/2022	SO	N	25										
	SB12014	LORNG_SB12014_0-1_08182022	FA98280-11	8/18/2022	SO	N	25										
		LORNG_SB12014_8-9_08182022	FA98280-12	8/18/2022	SO	N	25										
	SB12015	LORNG_SB12015_0-1_08182022	FA98280-13	8/18/2022	SO	N	25										
		LORNG_SB12015_6-7_08182022	FA98280-14	8/18/2022	SO	N	25										
	SB12016	LORNG_SB12016_0-1_08182022	FA98280-18	8/18/2022	SO	N	25										
		LORNG_SB12016_8-10_08182022	FA98280-19	8/18/2022	SO	N	25										
	SB12017	LORNG_SB12017_0-1_08182022	FA98280-20	8/18/2022	SO	N	25										
		LORNG_SB12017_0-1_08182022FD	FA98280-21	8/18/2022	SO	FD	25										
		LORNG_SB12017_9-10_08182022	FA98280-22	8/18/2022	SO	N	25										
	SB12018	LORNG_SB12018_0-1_08182022	FA98280-23	8/18/2022	SO	N	25										
		LORNG_SB12018_8-10_08182022	FA98280-24	8/18/2022	SO	N	25										
	SB12019	LORNG_SB12019_0-1_08182022	FA98280-15	8/18/2022	SO	N	25										
		LORNG_SB12019_8-10_08182022	FA98280-25	8/18/2022	SO	N	25										
		LORNG_SB12019_8-10_08182022FD	FA98280-26	8/18/2022	SO	FD	25										
	SB13027	LORNG_SB13027_0-1_08182022	FA98280-8	8/18/2022	SO	N	25										
		LORNG_SB13027_8-10_08182022	FA98280-9	8/18/2022	SO	N	25										
		LORNG_SB13027_8-10_08182022FD	FA98280-10	8/18/2022	SO	FD	25										
	SB13028	LORNG_SB13028_0-1_08182022	FA98280-16	8/18/2022	SO	N	25										
		LORNG_SB13028_8-10_08182022	FA98280-17	8/18/2022	SO	N	25										
	FIELDQC	LORNG_EB229_08192022	FA98312-1	8/19/2022	WQ	EB	25										
		LORNG_EB230_08192022	FA98312-2	8/19/2022	WQ	EB	25										
		LORNG_EB231_08192022	FA98312-3	8/19/2022	WQ	EB	25										
	SB06014	LORNG_SB06014_0-1_08192022	FA98312-13	8/19/2022	SO	N	25										
		LORNG_SB06014_6-7_08192022	FA98312-14	8/19/2022	SO	N	25										
	SB06015	LORNG_SB06015_0-1_08192022	FA98312-15	8/19/2022	SO	N	25										
		LORNG_SB06015_0-1_08192022FD	FA98312-16	8/19/2022	SO	FD	25										
		LORNG_SB06015_7-8_08192022	FA98312-17	8/19/2022	SO	N	25										
	SB13024	LORNG_SB13024_0-1_08182022	FA98312-4	8/18/2022	SO	N	25										
		LORNG_SB13024_8-9_08182022	FA98312-5	8/18/2022	SO	N	25										
	SB18030	LORNG_SB18030_0-1_08192022	FA98312-23	8/19/2022	SO	N	25										

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						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98312	SB18030	LORNG_SB18030_9-10_08192022	FA98312-24	8/19/2022	SO	N	25										
	SB21004	LORNG_SB21004_0-1_08182022	FA98312-6	8/18/2022	SO	N	25										
		LORNG_SB21004_0-1_08182022FD	FA98312-7	8/18/2022	SO	FD	25										
		LORNG_SB21004_2-3_08182022	FA98312-8	8/18/2022	SO	N	25										
	SB21005	LORNG_SB21005_0-1_08182022	FA98312-9	8/18/2022	SO	N	25										
		LORNG_SB21005_0-1_08182022FD	FA98312-10	8/18/2022	SO	FD	25										
		LORNG_SB21005_6-7_08182022	FA98312-11	8/18/2022	SO	N	25										
	SB22006	LORNG_SB22006_0-1_08192022	FA98312-18	8/19/2022	SO	N	25										
		LORNG_SB22006_8-10_08192022	FA98312-19	8/19/2022	SO	N	25										
	SB22007	LORNG_SB22007_0-1_08192022	FA98312-25	8/19/2022	SO	N	25										
		LORNG_SB22007_8-10_08192022	FA98312-26	8/19/2022	SO	N	25										
	SB22009	LORNG_SB22009_0-1_08192022	FA98312-27	8/19/2022	SO	N	25										
		LORNG_SB22009_8-10_08192022	FA98312-28	8/19/2022	SO	N	25										
		LORNG_SB22009_8-10_08192022FD	FA98312-29	8/19/2022	SO	FD	25										
	SB22010	LORNG_SB22010_0-1_08192022	FA98312-20	8/19/2022	SO	N	25										
		LORNG_SB22010_8-10_08192022	FA98312-21	8/19/2022	SO	N	25										
	SB22011	LORNG_SB22011_0-1_08192022	FA98312-12	8/19/2022	SO	N	25										
		LORNG_SB22011_6-7_08192022	FA98312-22	8/19/2022	SO	N	25										
FA98345	FIELDQC	LORNG_EB232_08192022	FA98345-1	8/19/2022	WQ	EB	25										
		LORNG_EB233_08202022	FA98345-12	8/20/2022	WQ	EB	25										
		LORNG_EB234_08202022	FA98345-13	8/20/2022	WQ	EB	25										
	SB07016	LORNG_SB07016_0-1_08202022	FA98345-24	8/20/2022	SO	N	25										
		LORNG_SB07016_8-10_08202022	FA98345-25	8/20/2022	SO	N	25										
	SB07017	LORNG_SB07017_0-1_08202022	FA98345-26	8/20/2022	SO	N	25										
		LORNG_SB07017_0-1_08202022FD	FA98345-27	8/20/2022	SO	FD	25										
		LORNG_SB07017_8-10_08202022	FA98345-28	8/20/2022	SO	N	25										
	SB07018	LORNG_SB07018_0-1_08202022	FA98345-29	8/20/2022	SO	N	25										
		LORNG_SB07018_8-10_08202022	FA98345-30	8/20/2022	SO	N	25										
		LORNG_SB07018_8-10_08202022FD	FA98345-31	8/20/2022	SO	FD	25										
	SB07019	LORNG_SB07019_0-1_08192022	FA98345-2	8/19/2022	SO	N	25										
		LORNG_SB07019_8-9_08192022	FA98345-5	8/19/2022	SO	N	25										
		LORNG_SB07019_8-9_08192022FD	FA98345-6	8/19/2022	SO	FD	25										
		LORNG_SB07019_9-10_08192022	FA98345-3	8/19/2022	SO	N	25										
	SB07020	LORNG_SB07020_0-1_08192022	FA98345-4	8/19/2022	SO	N	25										

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Date:12/9/22
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Date: 12/14/22

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA98345	SB07021	LORNG_SB07021_0-1_08202022	FA98345-14	8/20/2022	SO	N	25										
		LORNG_SB07021_8-10_08202022	FA98345-15	8/20/2022	SO	N	25										
		LORNG_SB07021_8-10_08202022FD	FA98345-16	8/20/2022	SO	FD	25										
	SB07022	LORNG_SB07022_0-1_08202022	FA98345-17	8/20/2022	SO	N	25										
		LORNG_SB07022_8-10_08202022	FA98345-18	8/20/2022	SO	N	25										
	SB07023	LORNG_SB07023_0-1_08202022	FA98345-19	8/20/2022	SO	N	25										
		LORNG_SB07023_7-8_08202022	FA98345-20	8/20/2022	SO	N	25										
	SB07024	LORNG_SB07024_0-1_08202022	FA98345-21	8/20/2022	SO	N	25										
		LORNG_SB07024_0-1_08202022FD	FA98345-32	8/20/2022	SO	FD	25										
		LORNG_SB07024_8-10_08202022	FA98345-33	8/20/2022	SO	N	25										
	SB07025	LORNG_SB07025_0-1_08202022	FA98345-22	8/20/2022	SO	N	25										
		LORNG_SB07025_8-10_08202022	FA98345-23	8/20/2022	SO	N	25										
	SB18031	LORNG_SB18031_0-1_08192022	FA98345-7	8/19/2022	SO	N	25										
		LORNG_SB18031_7-8_08192022	FA98345-8	8/19/2022	SO	N	25										
	SB18032	LORNG_SB18032_0-1_08192022	FA98345-9	8/19/2022	SO	N	25										
		LORNG_SB18032_0-1_08192022FD	FA98345-10	8/19/2022	SO	FD	25										
		LORNG_SB18032_7-8_08192022	FA98345-11	8/19/2022	SO	N	25										
FA98980	FIELDQC	LORNG_EB235_09142022	FA98980-11	9/14/2022	WQ	EB	25										
		LORNG_EB236_09142022	FA98980-23	9/14/2022	WQ	EB	25										
	SB01017	LORNG_SB01017_0-1_09142022	FA98980-12	9/14/2022	SO	N	25										
	SB01018	LORNG_SB01018_0-1_09142022	FA98980-24	9/14/2022	SO	N	25										
		LORNG_SB01018_1-2_09142022	FA98980-25	9/14/2022	SO	N	25										
	SB01021	LORNG_SB01021_0-1_09142022	FA98980-26	9/14/2022	SO	N	25										
	SB01023	LORNG_SB01023_0-1_09142022	FA98980-15	9/14/2022	SO	N	25										
	SB01024	LORNG_SB01024_0-1_09142022	FA98980-18	9/14/2022	SO	N	25										
	SB01027	LORNG_SB01027_0-1_09142022	FA98980-27	9/14/2022	SO	N	25										
	SB01028	LORNG_SB01028_0-1_09142022	FA98980-19	9/14/2022	SO	N	25										
	SB01029	LORNG_SB01029_0-1_09142022	FA98980-28	9/14/2022	SO	N	25										
		LORNG_SB01029_1-2_09142022	FA98980-29	9/14/2022	SO	N	25										
	SB05026	LORNG_SB05026_0-1_09132022	FA98980-20	9/13/2022	SO	N	25										
	SB05027	LORNG_SB05027_0-1_09132022	FA98980-1	9/13/2022	SO	N	25										
		LORNG_SB05027_1-2_09132022	FA98980-21	9/13/2022	SO	N	25										
	SB05030	LORNG_SB05030_0-1_09132022	FA98980-22	9/13/2022	SO	N	25										
	SB06016	LORNG_SB06016_0-1_09132022	FA98980-2	9/13/2022	SO	N	25										
	SB06017	LORNG_SB06017_0-1_09132022	FA98980-3	9/13/2022	SO	N	25										
	SB12012	LORNG_SB12012_0-1_09132022	FA98980-4	9/13/2022	SO	N	25										
	SB12013	LORNG_SB12013_0-1_09132022	FA98980-5	9/13/2022	SO	N	25										

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Method Class											
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
	SB12013	LORNG_SB12013_1-2_09132022	FA98980-6	9/13/2022	SO	N	25										
	SB19006	LORNG_SB19006_0-1_09132022	FA98980-7	9/13/2022	SO	N	25										
	SB19007	LORNG_SB19007_0-1_09132022	FA98980-8	9/13/2022	SO	N	25										
	SB19008	LORNG_SB19008_0-1_09132022	FA98980-9	9/13/2022	SO	N	25										
	SB21003	LORNG_SB21003_0-1_09132022	FA98980-10	9/13/2022	SO	N	25										
SP4213	FIELDQC	LORNG_TB10_08032022	SP4213-5	8/3/2022	SQ	TB		71									
	SB06006	LORNG_SB06006_0-1_08022022_K	SP4213-1	8/2/2022	SO	N		71	55	18	21	10	22	1	1		1
		LORNG_SB06006_7.5-8.5_8022022K	SP4213-2	8/2/2022	SO	N		71	55	18	21	10	22	1	1		1
	SB10010	LORNG_SB10010_0-1_08022022_K	SP4213-3	8/2/2022	SO	N		71	55	18			22	1	1		1
		LORNG_SB10010_8-10_08022022_K	SP4213-4	8/2/2022	SO	N		71	55	18			22	1	1		1
SP4245	FIELDQC	LORNG_TB11_08042022	SP4245-7	8/4/2022	SQ	TB		71									
	SB01006	LORNG_SB01006_0-1_08042022_K	SP4245-1	8/4/2022	SO	N		71	55	19	21	10	22	1	1		1
		LORNG_SB01006_8-10_08042022_K	SP4245-2	8/4/2022	SO	N		71	55	19	21	10	22	1	1		1
	SB07015	LORNG_SB07015_0-1_08042022_K	SP4245-3	8/4/2022	SO	N		71	55	19	21	10	22	1	1		1
		LORNG_SB07015_8-10_08042022_K	SP4245-4	8/4/2022	SO	N		71	55	19	21	10	22	1	1		1
	SB12009	LORNG_SB12009_0-1_08042022_K	SP4245-5	8/4/2022	SO	N		71	55	18			22	1	1		1
		LORNG_SB12009_8-10_08042022_K	SP4245-6	8/4/2022	SO	N		71	55	18			22	1	1		1
SP4277	SB17008	LORNG_SB17008_0-1_08042022_K	SP4277-1	8/4/2022	SO	N									1		1
		LORNG_SB17008_8-10_08042022_K	SP4277-2	8/4/2022	SO	N									1		1
SP4279	SB18027	LORNG_SB18027_0-1_08052022_K	SP4279-1	8/5/2022	SO	N									1		1
		LORNG_SB18027_8-10_08052022_K	SP4279-2	8/5/2022	SO	N									1		1
SP4287	FIELDQC	LORNG_TB12_08062022	SP4287-7	8/6/2022	SQ	TB		71									
	SB05016	LORNG_SB05016_0-1_08052022_K	SP4287-1	8/5/2022	SO	N		71	55	18	21	10	22	1	1		1
		LORNG_SB05016_0-1_08052022FD_K	SP4287-2	8/5/2022	SO	FD		71	55	18	21	10	22	1	1		1
		LORNG_SB05016_5-7_08052022_K	SP4287-3	8/5/2022	SO	N		71	55	18	21	10	22	1	1		1
	SB22004	LORNG_SB22004_0-1_08052022_K	SP4287-4	8/5/2022	SO	N									1		1
		LORNG_SB22004_8-10_08052022_K	SP4287-5	8/5/2022	SO	N									1		1
		LORNG_SB22004_8-10_08052022FDK	SP4287-6	8/5/2022	SO	FD									1		1
SP4356	SB20009	LORNG_SB20009_0-1_08082022_K	SP4356-1	8/8/2022	SO	N									1		1
		LORNG_SB20009_0-1_08082022FD_K	SP4356-2	8/8/2022	SO	FD									1		1
		LORNG_SB20009_8-10_08082022_K	SP4356-3	8/8/2022	SO	N									1		1
		LORNG_SB20009_8-10_08082022FDK	SP4356-4	8/8/2022	SO	FD									1		1
	SB24003	LORNG_SB24003_0-1_08082022_K	SP4356-5	8/8/2022	SO	N		71	55	18	21	10	22	1	1		1

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	VOCs	SVOCs	SVOCs by SIM	Pesticides	PCBs	Metals		WetChem		
						Analysis Method	M537	SW8260C	SW8270D	BNASIMD	SW8081B	SW8082A	SW6010C	SW7471B	A2540G	D2216	LYDKHN
						Fraction	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP4357	FIELDQC	LORNG_TB13_08092022	SP4357-3	8/9/2022	SQ	TB		71									
	SB24003	LORNG_SB24003_8-10_08082022_K	SP4357-1	8/8/2022	SO	N		71	55	18	21	10	22	1	1		1
		LORNG_SB24003_8-10_08082022FDK	SP4357-2	8/8/2022	SO	FD		71	55	18	21	10	22	1	1		1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

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Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Metho	Perchlorate
						Analysis	SW6850
						F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount
200-64482	SB06006	LORNG_SB06006_0-1_08022022_E	200-64482-1	8/2/2022	SO		1
		LORNG_SB06006_7.5-8.5_8022022E	200-64482-2	8/2/2022	SO		1
200-64483	SB01006	LORNG_SB01006_0-1_08042022_E	200-64483-1	8/4/2022	SO		1
		LORNG_SB01006_8-10_08042022_E	200-64483-2	8/4/2022	SO		1
	SB12009	LORNG_SB12009_0-1_08042022_E	200-64483-3	8/4/2022	SO		1
		LORNG_SB12009_8-10_08042022_E	200-64483-4	8/4/2022	SO		1
FA97849	FIELDQC	LORNG_EB137_08022022	FA97849-1	8/2/2022	WQ		
		LORNG_EB138_08032022	FA97849-2	8/3/2022	WQ		
	SB06006	LORNG_SB06006_0-1_08022022	FA97849-3	8/2/2022	SO		
		LORNG_SB06006_7.5-8.5_80222	FA97849-4	8/2/2022	SO		
	SB06008	LORNG_SB06008_0-1_08022022	FA97849-5	8/2/2022	SO		
		LORNG_SB06008_6-6.5_08022022	FA97849-6	8/2/2022	SO		
	SB10010	LORNG_SB10010_0-1_08022022	FA97849-7	8/2/2022	SO		
		LORNG_SB10010_18-20_08022022	FA97849-8	8/2/2022	SO		
		LORNG_SB10010_8-10_08022022	FA97849-9	8/2/2022	SO		
	SB14006	LORNG_SB14006_1-2_08022022	FA97849-10	8/2/2022	SO		
		LORNG_SB14006_6-8_08022022	FA97849-11	8/2/2022	SO		
FA97888	SB01006	LORNG_SB01006_0-1_08042022	FA97888-13	8/4/2022	SO		
		LORNG_SB01006_8-10_08042022	FA97888-14	8/4/2022	SO		
	SB08007	LORNG_SB08007_0-1_08032022	FA97888-1	8/3/2022	SO		
		LORNG_SB08007_8-10_08032022	FA97888-2	8/3/2022	SO		
	SB09004	LORNG_SB09004_0-1_08032022	FA97888-3	8/3/2022	SO		
		LORNG_SB09004_13-15_08032022	FA97888-4	8/3/2022	SO		
		LORNG_SB09004_8-10_08032022	FA97888-5	8/3/2022	SO		
	SB11004	LORNG_SB11004_0-1_08032022	FA97888-6	8/3/2022	SO		
		LORNG_SB11004_11-13_08032022	FA97888-7	8/3/2022	SO		
		LORNG_SB11004_8-10_08032022	FA97888-8	8/3/2022	SO		
	SB13021	LORNG_SB13021_0-1_08032022	FA97888-9	8/3/2022	SO		
		LORNG_SB13021_7-9_08032022	FA97888-10	8/3/2022	SO		
	SB13022	LORNG_SB13022_0-1_08032022	FA97888-11	8/3/2022	SO		
		LORNG_SB13022_6-8_08032022	FA97888-12	8/3/2022	SO		
	SB16015	LORNG_SB16015_0-1_08032022	FA97888-15	8/3/2022	SO		
		LORNG_SB16015_12-14_08032022	FA97888-16	8/3/2022	SO		
		LORNG_SB16015_8-10_08032022	FA97888-17	8/3/2022	SO		
	SB18027	LORNG_SB18027_0-1_08052022	FA97923-1	8/5/2022	SO		
		LORNG_SB18027_8-10_08052022	FA97923-2	8/5/2022	SO		
	SB18028	LORNG_SB18028_0-1_08052022	FA97923-3	8/5/2022	SO		
		LORNG_SB18028_8-10_08052022	FA97923-4	8/5/2022	SO		

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Former Loring Air Force Base, Limestone, Maine

					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
FA97923	SB18029	LORNG_SB18029_0-1_08052022	FA97923-5	8/5/2022	SO	
		LORNG_SB18029_0-1_08052022FD	FA97923-6	8/5/2022	SO	
		LORNG_SB18029_12-14_08052022	FA97923-7	8/5/2022	SO	
		LORNG_SB18029_12-14_08052022FD	FA97923-8	8/5/2022	SO	
		LORNG_SB18029_8-10_08052022	FA97923-9	8/5/2022	SO	
FA97926	FIELDQC	LORNG_EB129_08042022	FA97926-12	8/4/2022	WQ	
	SB05018	LORNG_SB05018_0-1_08042022	FA97926-1	8/4/2022	SO	
		LORNG_SB05018_0-1_08042022FD	FA97926-2	8/4/2022	SO	
		LORNG_SB05018_8-10_08042022	FA97926-3	8/4/2022	SO	
	SB07015	LORNG_SB07015_0-1_08042022	FA97926-4	8/4/2022	SO	
		LORNG_SB07015_8-10_08042022	FA97926-5	8/4/2022	SO	
	SB12009	LORNG_SB12009_0-1_08042022	FA97926-6	8/4/2022	SO	
		LORNG_SB12009_13-15_08042022	FA97926-7	8/4/2022	SO	
		LORNG_SB12009_8-10_08042022	FA97926-8	8/4/2022	SO	
	SB17008	LORNG_SB17008_0-1_08042022	FA97926-9	8/4/2022	SO	
		LORNG_SB17008_13-15_08042022	FA97926-10	8/4/2022	SO	
		LORNG_SB17008_8-10_08042022	FA97926-11	8/4/2022	SO	
FA97959	FIELDQC	LORNG_EB220_08052022	FA97959-1	8/5/2022	WQ	
		LORNG_EB221_08052022	FA97959-2	8/5/2022	WQ	
	SB05016	LORNG_SB05016_0-1_08052022	FA97959-3	8/5/2022	SO	
		LORNG_SB05016_0-1_08052022FD	FA97959-4	8/5/2022	SO	
		LORNG_SB05016_5-7_08052022	FA97959-5	8/5/2022	SO	
	SB22004	LORNG_SB22004_0-1_08052022	FA97959-6	8/5/2022	SO	
		LORNG_SB22004_13-15_08052022	FA97959-7	8/5/2022	SO	
		LORNG_SB22004_13-15_080522FD	FA97959-8	8/5/2022	SO	
		LORNG_SB22004_8-10_08052022	FA97959-9	8/5/2022	SO	
		LORNG_SB22004_8-10_08052022FD	FA97959-10	8/5/2022	SO	
FA98012	FIELDQC	LORNG_EB130_08082022	FA98012-1	8/8/2022	WQ	
	SB01015	LORNG_SB01015_0-1_08082022	FA98012-2	8/8/2022	SO	
		LORNG_SB01015_0-1_08082022FD	FA98012-3	8/8/2022	SO	
		LORNG_SB01015_11.5-13.5_8822	FA98012-4	8/8/2022	SO	
		LORNG_SB01015_11.5-13.5_8822FD	FA98012-5	8/8/2022	SO	
		LORNG_SB01015_8-10_08082022	FA98012-6	8/8/2022	SO	
		LORNG_SB01015_8-10_08082022FD	FA98012-7	8/8/2022	SO	

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Former Loring Air Force Base, Limestone, Maine

						Metho	Perchlorate
						Analysis	SW6850
						F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount	
FA98012	SB20009	LORNG_SB20009_0-1_08082022	FA98012-8	8/8/2022	SO		
		LORNG_SB20009_0-1_08082022FD	FA98012-9	8/8/2022	SO		
		LORNG_SB20009_13-15_08082022	FA98012-10	8/8/2022	SO		
		LORNG_SB20009_13-15_08082022FD	FA98012-11	8/8/2022	SO		
		LORNG_SB20009_8-10_08082022	FA98012-12	8/8/2022	SO		
		LORNG_SB20009_8-10_08082022FD	FA98012-13	8/8/2022	SO		
	SB24003	LORNG_SB24003_0-1_08082022	FA98012-14	8/8/2022	SO		
		LORNG_SB24003_11.5-13.5_8822	FA98012-15	8/8/2022	SO		
		LORNG_SB24003_11.5-13.5_8822FD	FA98012-16	8/8/2022	SO		
		LORNG_SB24003_8-10_08082022	FA98012-17	8/8/2022	SO		
		LORNG_SB24003_8-10_08082022FD	FA98012-18	8/8/2022	SO		
FA98221	BW22001	LORNG_BW22001_18-20_08162022	FA98221-10	8/16/2022	SO		
	FIELDQC	LORNG_EB222_08162022	FA98221-1	8/16/2022	WQ		
		LORNG_EB223_08172022	FA98221-19	8/17/2022	WQ		
		LORNG_EB224_08162022	FA98221-20	8/16/2022	WQ		
		LORNG_EB225_08172022	FA98221-21	8/17/2022	WQ		
	SB01019	LORNG_SB01019_0-1_08162022	FA98221-2	8/16/2022	SO		
		LORNG_SB01019_0-1_08162022FD	FA98221-3	8/16/2022	SO		
		LORNG_SB01019_8-10_08162022	FA98221-4	8/16/2022	SO		
	SB01020	LORNG_SB01020_0-1_08162022	FA98221-5	8/16/2022	SO		
		LORNG_SB01020_8-10_08162022	FA98221-6	8/16/2022	SO		
	SB01022	LORNG_SB01022_0-1_08162022	FA98221-11	8/16/2022	SO		
		LORNG_SB01022_8-10_08162022	FA98221-12	8/16/2022	SO		
	SB01025	LORNG_SB01025_0-1_08162022	FA98221-22	8/16/2022	SO		
		LORNG_SB01025_8-10_08162022	FA98221-23	8/16/2022	SO		
		LORNG_SB01025_8-10_08162022FD	FA98221-24	8/16/2022	SO		
	SB01026	LORNG_SB01026_0-1_08162022	FA98221-13	8/16/2022	SO		
		LORNG_SB01026_8-10_08162022	FA98221-14	8/16/2022	SO		
	SB20010	LORNG_SB20010_0-1_08162022	FA98221-7	8/16/2022	SO		
		LORNG_SB20010_7-8_08162022	FA98221-8	8/16/2022	SO		
	SB20011	LORNG_SB20011_0-1_08162022	FA98221-15	8/16/2022	SO		
		LORNG_SB20011_7-8_08162022	FA98221-16	8/16/2022	SO		
	SB20012	LORNG_SB20012_0-1_08162022	FA98221-9	8/16/2022	SO		
		LORNG_SB20012_7-8_08162022	FA98221-17	8/16/2022	SO		
	SB20013	LORNG_SB20013_0-1_08162022	FA98221-25	8/16/2022	SO		
		LORNG_SB20013_6-7_08162022	FA98221-26	8/16/2022	SO		
		LORNG_SB20014_0-1_08162022	FA98221-18	8/16/2022	SO		

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Metho	Perchlorate
						Analysis	SW6850
						F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media		ParamCount
	SB20014	LORNG_SB20014_7-8_08162022	FA98221-27	8/16/2022	SO		
		LORNG_SB20014_7-8_08162022FD	FA98221-28	8/16/2022	SO		
FA98256	SB05021	LORNG_SB05021_0-1_08172022	FA98256-1	8/17/2022	SO		
		LORNG_SB05021_0-1_08172022FD	FA98256-2	8/17/2022	SO		
		LORNG_SB05021_7-8_08172022	FA98256-3	8/17/2022	SO		
	SB05022	LORNG_SB05022_0-1_08172022	FA98256-4	8/17/2022	SO		
		LORNG_SB05022_8-9_08172022	FA98256-13	8/17/2022	SO		
	SB05023	LORNG_SB05023_0-1_08172022	FA98256-14	8/17/2022	SO		
		LORNG_SB05023_7-8_08172022	FA98256-15	8/17/2022	SO		
		LORNG_SB05023_7-8_08172022FD	FA98256-16	8/17/2022	SO		
	SB05028	LORNG_SB05028_0-1_08172022	FA98256-5	8/17/2022	SO		
		LORNG_SB05028_0-1_08172022FD	FA98256-6	8/17/2022	SO		
		LORNG_SB05028_7-8_08172022	FA98256-7	8/17/2022	SO		
	SB05029	LORNG_SB05029_0-1_08172022	FA98256-23	8/17/2022	SO		
		LORNG_SB05029_7-8_08172022	FA98256-24	8/17/2022	SO		
	SB10011	LORNG_SB10011_0-1_08172022	FA98256-8	8/17/2022	SO		
		LORNG_SB10011_8-10_08172022	FA98256-9	8/17/2022	SO		
	SB10012	LORNG_SB10012_0-1_08172022	FA98256-25	8/17/2022	SO		
		LORNG_SB10012_8-10_08172022	FA98256-26	8/17/2022	SO		
	SB10013	LORNG_SB10013_1-2_08172022	FA98256-17	8/17/2022	SO		
		LORNG_SB10013_8-10_08172022	FA98256-18	8/17/2022	SO		
	SB13025	LORNG_SB13025_0-1_08172022	FA98256-10	8/17/2022	SO		
		LORNG_SB13025_8-10_08172022	FA98256-19	8/17/2022	SO		
	SB13026	LORNG_SB13026_0-1_08172022	FA98256-20	8/17/2022	SO		
		LORNG_SB13026_8-10_08172022	FA98256-21	8/17/2022	SO		
		LORNG_SB13026_8-10_08172022FD	FA98256-22	8/17/2022	SO		
	SB14006	LORNG_SB14007_0-1_08172022	FA98256-11	8/17/2022	SO		
		LORNG_SB14007_8-10_08172022	FA98256-12	8/17/2022	SO		

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					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
FA98280	FIELDQC	LORNG_EB226_08182022	FA98280-1	8/18/2022	WQ	
		LORNG_EB227_08182022	FA98280-2	8/18/2022	WQ	
		LORNG_EB228_08182022	FA98280-3	8/18/2022	WQ	
	SB05024	LORNG_SB05024_0-1_08172022	FA98280-4	8/17/2022	SO	
		LORNG_SB05024_7-8_08172022	FA98280-5	8/17/2022	SO	
	SB05025	LORNG_SB05025_0-1_08172022	FA98280-6	8/17/2022	SO	
		LORNG_SB05025_8-9_08172022	FA98280-7	8/17/2022	SO	
	SB12014	LORNG_SB12014_0-1_08182022	FA98280-11	8/18/2022	SO	
		LORNG_SB12014_8-9_08182022	FA98280-12	8/18/2022	SO	
	SB12015	LORNG_SB12015_0-1_08182022	FA98280-13	8/18/2022	SO	
		LORNG_SB12015_6-7_08182022	FA98280-14	8/18/2022	SO	
	SB12016	LORNG_SB12016_0-1_08182022	FA98280-18	8/18/2022	SO	
		LORNG_SB12016_8-10_08182022	FA98280-19	8/18/2022	SO	
	SB12017	LORNG_SB12017_0-1_08182022	FA98280-20	8/18/2022	SO	
		LORNG_SB12017_0-1_08182022FD	FA98280-21	8/18/2022	SO	
		LORNG_SB12017_9-10_08182022	FA98280-22	8/18/2022	SO	
	SB12018	LORNG_SB12018_0-1_08182022	FA98280-23	8/18/2022	SO	
		LORNG_SB12018_8-10_08182022	FA98280-24	8/18/2022	SO	
	SB12019	LORNG_SB12019_0-1_08182022	FA98280-15	8/18/2022	SO	
		LORNG_SB12019_8-10_08182022	FA98280-25	8/18/2022	SO	
		LORNG_SB12019_8-10_08182022FD	FA98280-26	8/18/2022	SO	
	SB13027	LORNG_SB13027_0-1_08182022	FA98280-8	8/18/2022	SO	
		LORNG_SB13027_8-10_08182022	FA98280-9	8/18/2022	SO	
		LORNG_SB13027_8-10_08182022FD	FA98280-10	8/18/2022	SO	
	SB13028	LORNG_SB13028_0-1_08182022	FA98280-16	8/18/2022	SO	
		LORNG_SB13028_8-10_08182022	FA98280-17	8/18/2022	SO	
	FIELDQC	LORNG_EB229_08192022	FA98312-1	8/19/2022	WQ	
		LORNG_EB230_08192022	FA98312-2	8/19/2022	WQ	
		LORNG_EB231_08192022	FA98312-3	8/19/2022	WQ	
	SB06014	LORNG_SB06014_0-1_08192022	FA98312-13	8/19/2022	SO	
		LORNG_SB06014_6-7_08192022	FA98312-14	8/19/2022	SO	
	SB06015	LORNG_SB06015_0-1_08192022	FA98312-15	8/19/2022	SO	
		LORNG_SB06015_0-1_08192022FD	FA98312-16	8/19/2022	SO	
		LORNG_SB06015_7-8_08192022	FA98312-17	8/19/2022	SO	
	SB13024	LORNG_SB13024_0-1_08182022	FA98312-4	8/18/2022	SO	
		LORNG_SB13024_8-9_08182022	FA98312-5	8/18/2022	SO	
	SB18030	LORNG_SB18030_0-1_08192022	FA98312-23	8/19/2022	SO	

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					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
FA98312	SB18030	LORNG_SB18030_9-10_08192022	FA98312-24	8/19/2022	SO	
	SB21004	LORNG_SB21004_0-1_08182022	FA98312-6	8/18/2022	SO	
		LORNG_SB21004_0-1_08182022FD	FA98312-7	8/18/2022	SO	
		LORNG_SB21004_2-3_08182022	FA98312-8	8/18/2022	SO	
	SB21005	LORNG_SB21005_0-1_08182022	FA98312-9	8/18/2022	SO	
		LORNG_SB21005_0-1_08182022FD	FA98312-10	8/18/2022	SO	
		LORNG_SB21005_6-7_08182022	FA98312-11	8/18/2022	SO	
	SB22006	LORNG_SB22006_0-1_08192022	FA98312-18	8/19/2022	SO	
		LORNG_SB22006_8-10_08192022	FA98312-19	8/19/2022	SO	
	SB22007	LORNG_SB22007_0-1_08192022	FA98312-25	8/19/2022	SO	
		LORNG_SB22007_8-10_08192022	FA98312-26	8/19/2022	SO	
	SB22009	LORNG_SB22009_0-1_08192022	FA98312-27	8/19/2022	SO	
		LORNG_SB22009_8-10_08192022	FA98312-28	8/19/2022	SO	
		LORNG_SB22009_8-10_08192022FD	FA98312-29	8/19/2022	SO	
	SB22010	LORNG_SB22010_0-1_08192022	FA98312-20	8/19/2022	SO	
		LORNG_SB22010_8-10_08192022	FA98312-21	8/19/2022	SO	
	SB22011	LORNG_SB22011_0-1_08192022	FA98312-12	8/19/2022	SO	
		LORNG_SB22011_6-7_08192022	FA98312-22	8/19/2022	SO	
FA98345	FIELDQC	LORNG_EB232_08192022	FA98345-1	8/19/2022	WQ	
		LORNG_EB233_08202022	FA98345-12	8/20/2022	WQ	
		LORNG_EB234_08202022	FA98345-13	8/20/2022	WQ	
	SB07016	LORNG_SB07016_0-1_08202022	FA98345-24	8/20/2022	SO	
		LORNG_SB07016_8-10_08202022	FA98345-25	8/20/2022	SO	
	SB07017	LORNG_SB07017_0-1_08202022	FA98345-26	8/20/2022	SO	
		LORNG_SB07017_0-1_08202022FD	FA98345-27	8/20/2022	SO	
		LORNG_SB07017_8-10_08202022	FA98345-28	8/20/2022	SO	
	SB07018	LORNG_SB07018_0-1_08202022	FA98345-29	8/20/2022	SO	
		LORNG_SB07018_8-10_08202022	FA98345-30	8/20/2022	SO	
		LORNG_SB07018_8-10_08202022FD	FA98345-31	8/20/2022	SO	
	SB07019	LORNG_SB07019_0-1_08192022	FA98345-2	8/19/2022	SO	
		LORNG_SB07019_8-9_08192022	FA98345-5	8/19/2022	SO	
		LORNG_SB07019_8-9_08192022FD	FA98345-6	8/19/2022	SO	
		LORNG_SB07019_9-10_08192022	FA98345-3	8/19/2022	SO	
	SB07020	LORNG_SB07020_0-1_08192022	FA98345-4	8/19/2022	SO	

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Former Loring Air Force Base, Limestone, Maine

					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
FA98345	SB07021	LORNG_SB07021_0-1_08202022	FA98345-14	8/20/2022	SO	
		LORNG_SB07021_8-10_08202022	FA98345-15	8/20/2022	SO	
		LORNG_SB07021_8-10_08202022FD	FA98345-16	8/20/2022	SO	
	SB07022	LORNG_SB07022_0-1_08202022	FA98345-17	8/20/2022	SO	
		LORNG_SB07022_8-10_08202022	FA98345-18	8/20/2022	SO	
	SB07023	LORNG_SB07023_0-1_08202022	FA98345-19	8/20/2022	SO	
		LORNG_SB07023_7-8_08202022	FA98345-20	8/20/2022	SO	
	SB07024	LORNG_SB07024_0-1_08202022	FA98345-21	8/20/2022	SO	
		LORNG_SB07024_0-1_08202022FD	FA98345-32	8/20/2022	SO	
		LORNG_SB07024_8-10_08202022	FA98345-33	8/20/2022	SO	
	SB07025	LORNG_SB07025_0-1_08202022	FA98345-22	8/20/2022	SO	
		LORNG_SB07025_8-10_08202022	FA98345-23	8/20/2022	SO	
	SB18031	LORNG_SB18031_0-1_08192022	FA98345-7	8/19/2022	SO	
		LORNG_SB18031_7-8_08192022	FA98345-8	8/19/2022	SO	
	SB18032	LORNG_SB18032_0-1_08192022	FA98345-9	8/19/2022	SO	
		LORNG_SB18032_0-1_08192022FD	FA98345-10	8/19/2022	SO	
		LORNG_SB18032_7-8_08192022	FA98345-11	8/19/2022	SO	
FA98980	FIELDQC	LORNG_EB235_09142022	FA98980-11	9/14/2022	WQ	
		LORNG_EB236_09142022	FA98980-23	9/14/2022	WQ	
	SB01017	LORNG_SB01017_0-1_09142022	FA98980-12	9/14/2022	SO	
	SB01018	LORNG_SB01018_0-1_09142022	FA98980-24	9/14/2022	SO	
		LORNG_SB01018_1-2_09142022	FA98980-25	9/14/2022	SO	
	SB01021	LORNG_SB01021_0-1_09142022	FA98980-26	9/14/2022	SO	
	SB01023	LORNG_SB01023_0-1_09142022	FA98980-15	9/14/2022	SO	
	SB01024	LORNG_SB01024_0-1_09142022	FA98980-18	9/14/2022	SO	
	SB01027	LORNG_SB01027_0-1_09142022	FA98980-27	9/14/2022	SO	
	SB01028	LORNG_SB01028_0-1_09142022	FA98980-19	9/14/2022	SO	
	SB01029	LORNG_SB01029_0-1_09142022	FA98980-28	9/14/2022	SO	
		LORNG_SB01029_1-2_09142022	FA98980-29	9/14/2022	SO	
	SB05026	LORNG_SB05026_0-1_09132022	FA98980-20	9/13/2022	SO	
	SB05027	LORNG_SB05027_0-1_09132022	FA98980-1	9/13/2022	SO	
		LORNG_SB05027_1-2_09132022	FA98980-21	9/13/2022	SO	
	SB05030	LORNG_SB05030_0-1_09132022	FA98980-22	9/13/2022	SO	
	SB06016	LORNG_SB06016_0-1_09132022	FA98980-2	9/13/2022	SO	
	SB06017	LORNG_SB06017_0-1_09132022	FA98980-3	9/13/2022	SO	
	SB12012	LORNG_SB12012_0-1_09132022	FA98980-4	9/13/2022	SO	
	SB12013	LORNG_SB12013_0-1_09132022	FA98980-5	9/13/2022	SO	

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Former Loring Air Force Base, Limestone, Maine

					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
	SB12013	LORNG_SB12013_1-2_09132022	FA98980-6	9/13/2022	SO	
	SB19006	LORNG_SB19006_0-1_09132022	FA98980-7	9/13/2022	SO	
	SB19007	LORNG_SB19007_0-1_09132022	FA98980-8	9/13/2022	SO	
	SB19008	LORNG_SB19008_0-1_09132022	FA98980-9	9/13/2022	SO	
	SB21003	LORNG_SB21003_0-1_09132022	FA98980-10	9/13/2022	SO	
SP4213	FIELDQC	LORNG_TB10_08032022	SP4213-5	8/3/2022	SQ	
	SB06006	LORNG_SB06006_0-1_08022022_K	SP4213-1	8/2/2022	SO	
		LORNG_SB06006_7.5-8.5_8022022K	SP4213-2	8/2/2022	SO	
	SB10010	LORNG_SB10010_0-1_08022022_K	SP4213-3	8/2/2022	SO	
		LORNG_SB10010_8-10_08022022_K	SP4213-4	8/2/2022	SO	
SP4245	FIELDQC	LORNG_TB11_08042022	SP4245-7	8/4/2022	SQ	
	SB01006	LORNG_SB01006_0-1_08042022_K	SP4245-1	8/4/2022	SO	
		LORNG_SB01006_8-10_08042022_K	SP4245-2	8/4/2022	SO	
	SB07015	LORNG_SB07015_0-1_08042022_K	SP4245-3	8/4/2022	SO	
		LORNG_SB07015_8-10_08042022_K	SP4245-4	8/4/2022	SO	
	SB12009	LORNG_SB12009_0-1_08042022_K	SP4245-5	8/4/2022	SO	
		LORNG_SB12009_8-10_08042022_K	SP4245-6	8/4/2022	SO	
SP4277	SB17008	LORNG_SB17008_0-1_08042022_K	SP4277-1	8/4/2022	SO	
		LORNG_SB17008_8-10_08042022_K	SP4277-2	8/4/2022	SO	
SP4279	SB18027	LORNG_SB18027_0-1_08052022_K	SP4279-1	8/5/2022	SO	
		LORNG_SB18027_8-10_08052022_K	SP4279-2	8/5/2022	SO	
SP4287	FIELDQC	LORNG_TB12_08062022	SP4287-7	8/6/2022	SQ	
	SB05016	LORNG_SB05016_0-1_08052022_K	SP4287-1	8/5/2022	SO	
		LORNG_SB05016_0-1_08052022FD_K	SP4287-2	8/5/2022	SO	
		LORNG_SB05016_5-7_08052022_K	SP4287-3	8/5/2022	SO	
	SB22004	LORNG_SB22004_0-1_08052022_K	SP4287-4	8/5/2022	SO	
		LORNG_SB22004_8-10_08052022_K	SP4287-5	8/5/2022	SO	
		LORNG_SB22004_8-10_08052022FDK	SP4287-6	8/5/2022	SO	
SP4356	SB20009	LORNG_SB20009_0-1_08082022_K	SP4356-1	8/8/2022	SO	
		LORNG_SB20009_0-1_08082022FD_K	SP4356-2	8/8/2022	SO	
		LORNG_SB20009_8-10_08082022_K	SP4356-3	8/8/2022	SO	
		LORNG_SB20009_8-10_08082022FDK	SP4356-4	8/8/2022	SO	
	SB24003	LORNG_SB24003_0-1_08082022_K	SP4356-5	8/8/2022	SO	

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Former Loring Air Force Base, Limestone, Maine

					Metho	Perchlorate
					Analysis	SW6850
					F	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	ParamCount
SP4357	FIELDQC	LORNG_TB13_08092022	SP4357-3	8/9/2022	SQ	
	SB24003	LORNG_SB24003_8-10_08082022_K	SP4357-1	8/8/2022	SO	
		LORNG_SB24003_8-10_08082022FDK	SP4357-2	8/8/2022	SO	

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Proces
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97849											
		Location	SB06006		SB06008		SB10010							
		Sample Date	8/2/2022		8/2/2022		8/2/2022							
		Sample ID	LORNG_SB06006_0-1_08022022		LORNG_SB06006_7.5-8.5_80222		LORNG_SB06008_0-1_08022022		LORNG_SB06008_6-6.5_08022022		LORNG_SB10010_0-1_08022022		LORNG_SB10010_8-10_08022022		LORNG_SB10010_18-20_08022022	
		QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.5	J	1	J	0.99	J	0.72	J	1.1	U	1.1	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.95	J	2.4	J	0.68	J	5.9		1.1	U	1.1	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.2	UJ	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	3.7		2.4	J	1.1	U	0.93	J	1.1	U	1.1	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.99	J	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.81	J	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	104		20.9	J	4.9		37		6.2		1.1	U	1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97849											
			Location	SB06006		SB06008				SB10010					
			Sample Date	8/2/2022		8/2/2022				8/2/2022					
			Sample ID	LORNG_SB06006_0-1_08022022		LORNG_SB06006_7.5-8.5_80222		LORNG_SB06008_0-1_08022022		LORNG_SB06008_6-6.5_08022022		LORNG_SB10010_0-1_08022022		LORNG_SB10010_8-10_08022022		LORNG_SB10010_18-20_08022022	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1	U	1.4	U	1.1	U	1.3	U	1.1	U	1.1	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Date: 12/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97849		FA97888					
		Location	SB14006		SB01006		SB08007		SB09004	
		Sample Date	8/2/2022		8/4/2022		8/3/2022		8/3/2022	
		Sample ID	LORNG_SB14006_1-2_08022022	LORNG_SB14006_6-8_08022022	LORNG_SB01006_0-1_08042022	LORNG_SB01006_8-10_08042022	LORNG_SB08007_0-1_08032022	LORNG_SB08007_8-10_08032022	LORNG_SB09004_0-1_08032022	
		QC Code	N	N	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1 U	1.1 U	1.2 U	0.57 U	1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1 U	1.1 U	1.2 U	0.57 U	1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1 U	1.1 U	113	0.36 J	1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1 U	1.1 U	0.92 J	0.57 UJ	1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1 U	1.1 U	8.9	0.57 U	1 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1 U	1.1 U	2.5 J	0.57 UJ	1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1 U	1.1 U	1.2 U	0.57 U	1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1 U	1.1 U	1 J	0.57 U	1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1 U	1.1 U	6.8	0.57 U	1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1 U	1.1 U	4.5	0.57 U	1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1 U	1.1 U	1.2 U	0.57 U	1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1 U	1.1 U	167	0.57 U	1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1 U	1.1 U	1.5 J	0.57 U	1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1 U	1.1 U	607	0.94 J	1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1 U	1.1 U	8.2	0.57 U	1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1 U	1.1 U	17.5	0.57 U	1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1 U	1.1 U	8.6 J	0.57 U	1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1 U	1.1 U	900	0.9 J	1 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1 U	1.1 U	7,000	10 J	1 U	1.1 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1 U	1.1 U	24.9	0.57 U	1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1 U	1.1 U	0.8 J	0.57 U	1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1 U	1.1 U	2.4	0.57 U	1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1 U	1.1 U	1.2 U	0.57 U	1 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97849		FA97888							
			Location	SB14006		SB01006		SB08007		SB09004			
			Sample Date	8/2/2022		8/4/2022		8/3/2022		8/3/2022			
			Sample ID	LORNG_SB14006_1-2_08022022		LORNG_SB14006_6-8_08022022		LORNG_SB01006_0-1_08042022		LORNG_SB01006_8-10_08042022		LORNG_SB08007_0-1_08032022	
			QC Code	N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1	U	1.1	U	1.2	U	0.57	U	1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1	U	1.1	U	1.2	U	0.57	U	1	U

			SDG	FA97888			
			Location	SB08007		SB09004	
			Sample Date	8/3/2022		8/3/2022	
			Sample ID	LORNG_SB08007_8-10_08032022		LORNG_SB09004_0-1_08032022	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97888							
		Location	SB09004		SB11004			SB13021		
		Sample Date	8/3/2022		8/3/2022			8/3/2022		
		Sample ID	LORNG_SB09004_8-10_08032022	LORNG_SB09004_13-15_08032022	LORNG_SB11004_0-1_08032022	LORNG_SB11004_8-10_08032022	LORNG_SB11004_11-13_08032022	LORNG_SB13021_0-1_08032022	LORNG_SB13021_7-9_08032022
		QC Code	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 UJ	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 UJ	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.2 U	1.1 U	0.62 J	1.1 U	1.1 U	9	0.62 J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U

Prepared by: AKN
Date: 12/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97888											
			Location	SB09004		SB11004				SB13021					
			Sample Date	8/3/2022		8/3/2022				8/3/2022					
			Sample ID	LORNG_SB09004_8-10_08032022		LORNG_SB09004_13-15_08032022		LORNG_SB11004_0-1_08032022		LORNG_SB11004_8-10_08032022		LORNG_SB11004_11-13_08032022		LORNG_SB13021_0-1_08032022		LORNG_SB13021_7-9_08032022	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97888					FA97923	
		Location	SB13022		SB16015			SB18027	
		Sample Date	8/3/2022		8/3/2022			8/5/2022	
		Sample ID	LORNG_SB13022_0-1_08032022	LORNG_SB13022_6-8_08032022	LORNG_SB16015_0-1_08032022	LORNG_SB16015_8-10_08032022	LORNG_SB16015_12-14_08032022	LORNG_SB18027_0-1_08052022	LORNG_SB18027_8-10_08052022
		QC Code	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.3 J	1.1 U	5.3	2.9	0.75 J	4.4	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97888							FA97923	
			Location	SB13022		SB16015					SB18027	
			Sample Date	8/3/2022		8/3/2022					8/5/2022	
			Sample ID	LORNG_SB13022_0-1_08032022		LORNG_SB13022_6-8_08032022		LORNG_SB16015_0-1_08032022		LORNG_SB16015_8-10_08032022	LORNG_SB16015_12-14_08032022	
			QC Code	N		N		N		N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97923							
		Location	SB18028		SB18029					
		Sample Date	8/5/2022		8/5/2022					
		Sample ID	LORNG_SB18028_0-1_08052022	LORNG_SB18028_8-10_08052022	LORNG_SB18029_0-1_08052022	LORNG_SB18029_0-1_08052022FD	LORNG_SB18029_8-10_08052022	LORNG_SB18029_12-14_08052022	LORNG_SB18029_12-14_08052022FD
		QC Code	N	N	N	FD	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.3 U	0.73 J	1.1 U	1.2 U	1.2 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	1.1 U	9.1	11.8	1.1 U	1.2 U	1.2 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	0.78 J	0.92 J	1.1 U	1.2 U	1.2 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.3 U	1.3 U	1.1 U	1.2 U	1.2 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97923											
			Location	SB18028				SB18029							
			Sample Date	8/5/2022				8/5/2022							
			Sample ID	LORNG_SB18028_0-1_08052022		LORNG_SB18028_8-10_08052022		LORNG_SB18029_0-1_08052022		LORNG_SB18029_0-1_08052022FD		LORNG_SB18029_8-10_08052022		LORNG_SB18029_12-14_08052022		LORNG_SB18029_12-14_08052022FD	
			QC Code	N		N		N		FD		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.3	U	1.3	U	1.1	U	1.2	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.3	U	1.3	U	1.1	U	1.2	U	1.2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97926							
		Location	SB05018			SB07015		SB12009		
		Sample Date	8/4/2022			8/4/2022		8/4/2022		
		Sample ID	LORNG_SB05018_0-1_08042022	LORNG_SB05018_0-1_08042022FD	LORNG_SB05018_8-10_08042022	LORNG_SB07015_0-1_08042022	LORNG_SB07015_8-10_08042022	LORNG_SB12009_0-1_08042022	LORNG_SB12009_8-10_08042022	
		QC Code	N	FD	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	0.58 J	1.1 U	1.8 J	91.3	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	0.57 J	1.1 U	4.6	3.6	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 UJ	1.1 U	1.1 U	6.2 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 J	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.84 J	0.84 J	1.1 U	4.8	1.2 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.4 J	1.2 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	3.3	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3 J	1.3 J	1.1 U	1.6 J	4	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	2 J	2 J	1.1 U	6.2	92.4	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.89 J	0.9 J	1.1 U	1.3 J	4.4	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	7.6	1.2 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	0.56 J	1.1 U	1.1 U	1.9 J	1.8 J	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.5 J	1.7 J	1.1 U	11.9	1.2 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	18.3	18.9	20.6	172	249	2.5	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.6 J	1.8 J	1.1 U	3.9	25.2	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	3.9	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1 J	1.1 J	1.1 U	1.9 J	4.8	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97926											
			Location	SB05018						SB07015				SB12009	
			Sample Date	8/4/2022						8/4/2022				8/4/2022	
			Sample ID	LORNG_SB05018_0-1_08042022		LORNG_SB05018_0-1_08042022FD		LORNG_SB05018_8-10_08042022		LORNG_SB07015_0-1_08042022		LORNG_SB07015_8-10_08042022		LORNG_SB12009_0-1_08042022		LORNG_SB12009_8-10_08042022	
			QC Code	N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	0.6	J	1.1	U	1.9	J	1.2	U	1.1	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97926				FA97959		
		Location	SB12009	SB17008			SB05016		
		Sample Date	8/4/2022	8/4/2022			8/5/2022		
		Sample ID	LORNG_SB12009_13-15_08042022	LORNG_SB17008_0-1_08042022	LORNG_SB17008_8-10_08042022	LORNG_SB17008_13-15_08042022	LORNG_SB05016_0-1_08052022	LORNG_SB05016_0-1_08052022FD	LORNG_SB05016_5-7_08052022
		QC Code	N	N	N	N	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	2.9 J	0.75 J	1.1 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	2.5 J	0.62 J	1 J
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	5.5 U	5.5 UJ	5.5 UJ	5.9 U	1.1 U	5.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	0.85 J	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	0.94 J	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	0.91 J	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	5 J	1.5 J	2.6
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	0.74 J	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.4 J	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.8 J	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	5.5 U	5.5 UJ	1.1 U	4.4 J	1.5 J	2 J
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	0.96 J	0.55 J	1.1 U	113 J	22.9 J	37.3
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.8 J	1.1 U	0.57 J
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.7 J	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97926				FA97959		
			Location	SB12009	SB17008			SB05016		
			Sample Date	8/4/2022	8/4/2022			8/5/2022		
			Sample ID	LORNG_SB12009_13-15_08042022	LORNG_SB17008_0-1_08042022	LORNG_SB17008_8-10_08042022	LORNG_SB17008_13-15_08042022	LORNG_SB05016_0-1_08052022	LORNG_SB05016_0-1_08052022FD	LORNG_SB05016_5-7_08052022
			QC Code	N	N	N	N	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	0.74 J	1.1 U	1.1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97959									FA98012		
			Location	SB22004									SB01015		
			Sample Date	8/5/2022									8/8/2022		
			Sample ID	LORNG_SB22004_0-1_08052022		LORNG_SB22004_8-10_08052022		LORNG_SB22004_8-10_08052022FD		LORNG_SB22004_13-15_08052022		LORNG_SB22004_13-15_080522FD		LORNG_SB01015_0-1_08082022		LORNG_SB01015_0-1_08082022FD	
			QC Code	N		N		FD		N		FD		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.2	UJ	5.5	UJ	5.5	UJ	5.5	UJ	1.1	U	0.55	UJ	0.64	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.4	J	0.41	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.34	J
		Perfluorononanoic acid (PFNA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	5.2	UJ	5.5	UJ	5.5	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	3.5		0.75	J	1.1	U	1.1	U	1.1	U	6.2		6.8	
		Perfluorooctanoic acid (PFOA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.37	J	0.37	J
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97959								FA98012			
			Location	SB22004								SB01015			
			Sample Date	8/5/2022								8/8/2022			
			Sample ID	LORNG_SB22004_0-1_08052022		LORNG_SB22004_8-10_08052022		LORNG_SB22004_8-10_08052022FD		LORNG_SB22004_13-15_08052022		LORNG_SB22004_13-15_080522FD		LORNG_SB01015_0-1_08082022		LORNG_SB01015_0-1_08082022FD	
			QC Code	N		N		FD		N		FD		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.55	U	0.64	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1	U	1.1	U	1.1	U	1.1	U	1.1	U	0.39	J	0.4	J

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Date: 12/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98012						
		Location	SB01015				SB20009		
		Sample Date	8/8/2022				8/8/2022		
		Sample ID	LORNG_SB01015_8-10_08082022	LORNG_SB01015_8-10_08082022FD	LORNG_SB01015_11.5-13.5_8822	LORNG_SB01015_11.5-13.5_8822FD	LORNG_SB20009_0-1_08082022	LORNG_SB20009_0-1_08082022FD	LORNG_SB20009_8-10_08082022
		QC Code	N	FD	N	FD	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.3 J	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.38 J	0.46 J	0.54 J	0.55 J	0.55 U	0.57 U	0.55 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 J	0.72 J	0.55 U
		Perfluorodecanoic acid (PFDA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.41 J	0.56 U	0.54 U	0.54 U	0.66 J	0.97 J	1 J
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.41 J	0.59 J	0.55 U
		Perfluorononanoic acid (PFNA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	9.4 J	3.8 J	6.9	7.8	14.1	21.3	6
		Perfluorooctanoic acid (PFOA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.56 U	0.56 U	0.54 U	0.54 U	0.55 U	0.57 U	0.55 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98012													
			Location	SB01015							SB20009						
			Sample Date	8/8/2022							8/8/2022						
			Sample ID	LORNG_SB01015_8-10_08082022		LORNG_SB01015_8-10_08082022FD		LORNG_SB01015_11.5-13.5_8822		LORNG_SB01015_11.5-13.5_8822FD		LORNG_SB20009_0-1_08082022		LORNG_SB20009_0-1_08082022FD		LORNG_SB20009_8-10_08082022	
			QC Code	N		FD		N		FD		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.56	U	0.56	U	0.54	U	0.54	U	0.55	U	0.57	U	0.55	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.56	U	0.56	U	0.54	U	0.54	U	0.55	U	0.57	U	0.55	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98012						
		Location	SB20009			SB24003			
		Sample Date	8/8/2022			8/8/2022			
		Sample ID	LORNG_SB20009_8-10_08082022FD	LORNG_SB20009_13-15_08082022	LORNG_SB20009_13-15_08082022FD	LORNG_SB24003_0-1_08082022	LORNG_SB24003_8-10_08082022	LORNG_SB24003_8-10_08082022FD	LORNG_SB24003_11.5-13.5_8822
		QC Code	FD	N	FD	N	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.54 U	0.56 U	0.56 U	2.8 U	0.55 U	0.55 U	0.56 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorodecanoic acid (PFDA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1 J	0.88 J	0.8 J	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorononanoic acid (PFNA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.54 U	0.56 U	0.56 U	2.8 U	0.55 U	0.55 U	0.56 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	8.1	6.8	6.4	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorooctanoic acid (PFOA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.54 U	0.56 U	0.56 U	0.56 U	0.55 U	0.55 U	0.56 U

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Date: 12/9/22
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Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98012												
			Location	SB20009						SB24003						
			Sample Date	8/8/2022						8/8/2022						
			Sample ID	LORNG_SB20009_8-10_08082022FD		LORNG_SB20009_13-15_08082022		LORNG_SB20009_13-15_08082022FD		LORNG_SB24003_0-1_08082022		LORNG_SB24003_8-10_08082022		LORNG_SB24003_8-10_08082022FD		LORNG_SB24003_11.5-13.5_8822	
			QC Code	FD		N		FD		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.54	U	0.56	U	0.56	U	0.56	U	0.55	U	0.55	U	0.56	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.54	U	0.56	U	0.56	U	0.56	U	0.55	U	0.55	U	0.56	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98012		FA98221							
			Location	SB24003		BW22001		SB01019				SB01020	
			Sample Date	8/8/2022		8/16/2022		8/16/2022				8/16/2022	
			Sample ID	LORNG_SB24003_11.5-13.5_8822FD		LORNG_BW22001_18-20_08162022		LORNG_SB01019_0-1_08162022		LORNG_SB01019_0-1_08162022FD		LORNG_SB01019_8-10_08162022		LORNG_SB01020_0-1_08162022		LORNG_SB01020_8-10_08162022	
			QC Code	FD		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.56	U	1.1	U	5.7		6.3		1.1	U	1.1	U	1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

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Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98012		FA98221							
			Location	SB24003		BW22001		SB01019				SB01020	
			Sample Date	8/8/2022		8/16/2022		8/16/2022				8/16/2022	
			Sample ID	LORNG_SB24003_11.5-13.5_8822FD		LORNG_BW22001_18-20_08162022		LORNG_SB01019_0-1_08162022		LORNG_SB01019_0-1_08162022FD		LORNG_SB01019_8-10_08162022		LORNG_SB01020_0-1_08162022		LORNG_SB01020_8-10_08162022	
			QC Code	FD		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.56	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98221											
			Location	SB01022		SB01025						SB01026			
			Sample Date	8/16/2022		8/16/2022						8/16/2022			
			Sample ID	LORNG_SB01022_0-1_08162022		LORNG_SB01022_8-10_08162022		LORNG_SB01025_0-1_08162022		LORNG_SB01025_8-10_08162022		LORNG_SB01025_8-10_08162022FD		LORNG_SB01026_0-1_08162022		LORNG_SB01026_8-10_08162022	
			QC Code	N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2	UJ	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1	J	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.62	J	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	7		1.7	J	1	J	0.57	J	1.1	U	1.4	J	1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98221												
			Location	SB01022		SB01025						SB01026				
			Sample Date	8/16/2022		8/16/2022						8/16/2022				
			Sample ID	LORNG_SB01022_0-1_08162022		LORNG_SB01022_8-10_08162022		LORNG_SB01025_0-1_08162022		LORNG_SB01025_8-10_08162022		LORNG_SB01025_8-10_08162022FD		LORNG_SB01026_0-1_08162022		LORNG_SB01026_8-10_08162022	
			QC Code	N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98221							
		Location	SB20010		SB20011		SB20012		SB20013	
		Sample Date	8/16/2022		8/16/2022		8/16/2022		8/16/2022	
		Sample ID	LORNG_SB20010_0-1_08162022	LORNG_SB20010_7-8_08162022	LORNG_SB20011_0-1_08162022	LORNG_SB20011_7-8_08162022	LORNG_SB20012_0-1_08162022	LORNG_SB20012_7-8_08162022	LORNG_SB20013_0-1_08162022	
		QC Code	N	N	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.65 J	1.1 U	2.5	1.1 U	8.4	1.1 U	0.88 J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98221												
			Location	SB20010		SB20011		SB20012				SB20013				
			Sample Date	8/16/2022		8/16/2022		8/16/2022				8/16/2022				
			Sample ID	LORNG_SB20010_0-1_08162022		LORNG_SB20010_7-8_08162022		LORNG_SB20011_0-1_08162022		LORNG_SB20011_7-8_08162022		LORNG_SB20012_0-1_08162022		LORNG_SB20012_7-8_08162022		LORNG_SB20013_0-1_08162022	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98221				FA98256		
		Location	SB20013	SB20014			SB05021		
		Sample Date	8/16/2022	8/16/2022			8/17/2022		
		Sample ID	LORNG_SB20013_6-7_08162022	LORNG_SB20014_0-1_08162022	LORNG_SB20014_7-8_08162022	LORNG_SB20014_7-8_08162022FD	LORNG_SB05021_0-1_08172022	LORNG_SB05021_0-1_08172022FD	LORNG_SB05021_7-8_08172022
		QC Code	N	N	N	FD	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.3 J	1.3 J	1.1 U	1.1 U	4	3.7	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98221				FA98256		
			Location	SB20013	SB20014			SB05021		
			Sample Date	8/16/2022	8/16/2022			8/17/2022		
			Sample ID	LORNG_SB20013_6-7_08162022	LORNG_SB20014_0-1_08162022	LORNG_SB20014_7-8_08162022	LORNG_SB20014_7-8_08162022FD	LORNG_SB05021_0-1_08172022	LORNG_SB05021_0-1_08172022FD	LORNG_SB05021_7-8_08172022
			QC Code	N	N	N	FD	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256									
			Location	SB05022		SB05023			SB05028				
			Sample Date	8/17/2022		8/17/2022			8/17/2022				
			Sample ID	LORNG_SB05022_0-1_08172022		LORNG_SB05022_8-9_08172022	LORNG_SB05023_0-1_08172022	LORNG_SB05023_7-8_08172022	LORNG_SB05023_7-8_08172022FD	LORNG_SB05028_0-1_08172022		LORNG_SB05028_0-1_08172022FD	
			QC Code	N		N	N	N	FD	N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.1 U	2.2	J	1.1 U	0.74	J	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	J	0.84 J	6		1.1 U	0.64	J	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.1 U	1	J	1.1 U	1.2	U	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	J	1.1 U	1.2	J	1.1 J	1.4	J	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.1 U	0.69	J	1.1 U	1.2	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.1 U	0.82	J	1.1 U	1.2	U	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.54	J	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	21.3		8.7	53.4		13.2	18.9		23.2	16.1
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.1 U	1.8	J	1.1 U	1.1	U	0.87	J 0.64 J
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.1 U	1.6	J	1.1 U	1.2	U	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.1 U	1.1	U	1.1 U	1.2	U	1.2	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256											
			Location	SB05022				SB05023						SB05028	
			Sample Date	8/17/2022				8/17/2022						8/17/2022	
			Sample ID	LORNG_SB05022_0-1_08172022		LORNG_SB05022_8-9_08172022		LORNG_SB05023_0-1_08172022		LORNG_SB05023_7-8_08172022		LORNG_SB05023_7-8_08172022FD		LORNG_SB05028_0-1_08172022		LORNG_SB05028_0-1_08172022FD	
			QC Code	N		N		N		N		FD		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1	J	1.1	U	1.1	U	1.2	U	1.2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256											
			Location	SB05028		SB05029				SB10011				SB10012	
			Sample Date	8/17/2022		8/17/2022				8/17/2022				8/17/2022	
			Sample ID	LORNG_SB05028_7-8_08172022		LORNG_SB05029_0-1_08172022		LORNG_SB05029_7-8_08172022		LORNG_SB10011_0-1_08172022		LORNG_SB10011_8-10_08172022		LORNG_SB10012_0-1_08172022		LORNG_SB10012_8-10_08172022	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.1	U	0.67	J	1.1	U	1.1	U	1.2	U	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.1	U	1.2	J	1.1	U	1.1	U	1.2	U	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.7	J	1.2	J	0.78	J	1.1	U	1.2	U	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.1	U	1.1	U	0.87	J	1.1	U	1.2	U	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1	U	24.2		34.4		28.4		1.1	U	0.8	J	1.2	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.1	U	1.1	U	0.85	J	1.1	U	1.2	U	1.2	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256												
			Location	SB05028		SB05029		SB05029		SB10011		SB10011		SB10012		SB10012	
			Sample Date	8/17/2022		8/17/2022		8/17/2022		8/17/2022		8/17/2022		8/17/2022		8/17/2022	
			Sample ID	LORNG_SB05028_7-8_08172022		LORNG_SB05029_0-1_08172022		LORNG_SB05029_7-8_08172022		LORNG_SB10011_0-1_08172022		LORNG_SB10011_8-10_08172022		LORNG_SB10012_0-1_08172022		LORNG_SB10012_8-10_08172022	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98256							
		Location	SB10013		SB13025		SB13026			
		Sample Date	8/17/2022		8/17/2022		8/17/2022			
		Sample ID	LORNG_SB10013_1-2_08172022	LORNG_SB10013_8-10_08172022	LORNG_SB13025_0-1_08172022	LORNG_SB13025_8-10_08172022	LORNG_SB13026_0-1_08172022	LORNG_SB13026_8-10_08172022	LORNG_SB13026_8-10_08172022FD	
		QC Code	N	N	N	N	N	N	FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	5.2 R	1.1 U	1 UJ	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	5.2 UJ	1.1 U	1 UJ	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	1.1 U	0.64 J	1.1 U	1 U	1.1 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U

Prepared by: AKN
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256								
			Location	SB10013		SB13025		SB13026				
			Sample Date	8/17/2022		8/17/2022		8/17/2022				
			Sample ID	LORNG_SB10013_1-2_08172022		LORNG_SB10013_8-10_08172022		LORNG_SB13025_0-1_08172022		LORNG_SB13025_8-10_08172022		LORNG_SB13026_0-1_08172022		LORNG_SB13026_8-10_08172022		LORNG_SB13026_8-10_08172022FD	
			QC Code	N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98256		FA98280					
		Location	SB14006		SB05024		SB05025		SB12014	
		Sample Date	8/17/2022		8/17/2022		8/17/2022		8/18/2022	
		Sample ID	LORNG_SB14007_0-1_08172022	LORNG_SB14007_8-10_08172022	LORNG_SB05024_0-1_08172022	LORNG_SB05024_7-8_08172022	LORNG_SB05025_0-1_08172022	LORNG_SB05025_8-9_08172022	LORNG_SB12014_0-1_08182022	
		QC Code	N	N	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	5.6 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.9 J	0.99 J	1 J	1.1 U	1.1 J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.4 J	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	0.7 J	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	0.7 J	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.2 J	1.1 U	101	14.3	62.4 J	1.1 U	20.4
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	0.79 J	1.1 U	0.65 J	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 J	1.1 U	1.1 J	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98256		FA98280					
			Location	SB14006		SB05024		SB05025		SB12014	
			Sample Date	8/17/2022		8/17/2022		8/17/2022		8/18/2022	
			Sample ID	LORNG_SB14007_0-1_08172022	LORNG_SB14007_8-10_08172022	LORNG_SB05024_0-1_08172022	LORNG_SB05024_7-8_08172022	LORNG_SB05025_0-1_08172022	LORNG_SB05025_8-9_08172022	LORNG_SB12014_0-1_08182022	
			QC Code	N	N	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98280											
		Location	SB12014		SB12015		SB12015		SB12016		SB12016		SB12017	
		Sample Date	8/18/2022		8/18/2022		8/18/2022		8/18/2022		8/18/2022		8/18/2022	
		Sample ID	LORNG_SB12014_8-9_08182022		LORNG_SB12015_0-1_08182022		LORNG_SB12015_6-7_08182022		LORNG_SB12016_0-1_08182022		LORNG_SB12016_8-10_08182022		LORNG_SB12017_0-1_08182022	LORNG_SB12017_0-1_08182022FD
		QC Code	N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2	U	5.6	UJ	1.1	U	1.1	U	5.9	UJ	1.1	U	5.2	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.6	J	3		1.1	U	0.89	J	0.7	J	1.1	U	1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98280													
			Location	SB12014		SB12015				SB12016				SB12017			
			Sample Date	8/18/2022		8/18/2022				8/18/2022				8/18/2022			
			Sample ID	LORNG_SB12014_8-9_08182022		LORNG_SB12015_0-1_08182022		LORNG_SB12015_6-7_08182022		LORNG_SB12016_0-1_08182022		LORNG_SB12016_8-10_08182022		LORNG_SB12017_0-1_08182022		LORNG_SB12017_0-1_08182022FD	
			QC Code	N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98280											
		Location	SB12017	SB12018		SB12019			SB13027					
		Sample Date	8/18/2022	8/18/2022		8/18/2022			8/18/2022					
		Sample ID	LORNG_SB12017_9-10_08182022	LORNG_SB12018_0-1_08182022	LORNG_SB12018_8-10_08182022	LORNG_SB12019_0-1_08182022	LORNG_SB12019_8-10_08182022	LORNG_SB12019_8-10_08182022FD	LORNG_SB13027_0-1_08182022					
		QC Code	N	N	N	N	N	FD	N					
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	5.2	U	1.1	U	6.1	U	1.1	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.61	J	1	U	1.1	U	4.8		1.1	U	1	J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98280															
			Location	SB12017		SB12018				SB12019						SB13027			
			Sample Date	8/18/2022		8/18/2022				8/18/2022						8/18/2022			
			Sample ID	LORNG_SB12017_9-10_08182022		LORNG_SB12018_0-1_08182022		LORNG_SB12018_8-10_08182022		LORNG_SB12019_0-1_08182022		LORNG_SB12019_8-10_08182022		LORNG_SB12019_8-10_08182022FD		LORNG_SB13027_0-1_08182022			
			QC Code	N		N		N		N		N		FD		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U		
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U		

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Date: 12/9/22
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Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98280				FA98312			
		Location	SB13027		SB13028		SB06014		SB06015	
		Sample Date	8/18/2022		8/18/2022		8/19/2022		8/19/2022	
		Sample ID	LORNG_SB13027_8-10_08182022	LORNG_SB13027_8-10_08182022FD	LORNG_SB13028_0-1_08182022	LORNG_SB13028_8-10_08182022	LORNG_SB06014_0-1_08192022	LORNG_SB06014_6-7_08192022	LORNG_SB06015_0-1_08192022	
		QC Code	N	FD	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	1.1 U	1.2 J	1.1 U	5.8	3.5	5.2
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98280						FA98312			
			Location	SB13027		SB13028				SB06014		SB06015	
			Sample Date	8/18/2022		8/18/2022				8/19/2022		8/19/2022	
			Sample ID	LORNG_SB13027_8-10_08182022		LORNG_SB13027_8-10_08182022FD		LORNG_SB13028_0-1_08182022		LORNG_SB13028_8-10_08182022		LORNG_SB06014_0-1_08192022	
			QC Code	N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

			SDG	FA98312			
			Location	SB06014		SB06015	
			Sample Date	8/19/2022		8/19/2022	
			Sample ID	LORNG_SB06014_6-7_08192022		LORNG_SB06015_0-1_08192022	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98312							
		Location	SB06015		SB13024		SB18030		SB21004	
		Sample Date	8/19/2022		8/18/2022		8/19/2022		8/18/2022	
		Sample ID	LORNG_SB06015_0-1_08192022FD	LORNG_SB06015_7-8_08192022	LORNG_SB13024_0-1_08182022	LORNG_SB13024_8-9_08182022	LORNG_SB18030_0-1_08192022	LORNG_SB18030_9-10_08192022	LORNG_SB21004_0-1_08182022	
		QC Code	FD	N	N	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 J	1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.9	5.2	1.5 J	1.1 U	1.7 J	1.1 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312											
			Location	SB06015		SB13024				SB18030				SB21004	
			Sample Date	8/19/2022		8/18/2022				8/19/2022				8/18/2022	
			Sample ID	LORNG_SB06015_0-1_08192022FD		LORNG_SB06015_7-8_08192022		LORNG_SB13024_0-1_08182022		LORNG_SB13024_8-9_08182022		LORNG_SB18030_0-1_08192022		LORNG_SB18030_9-10_08192022		LORNG_SB21004_0-1_08182022	
			QC Code	FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.3	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.3	U	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98312							
		Location	SB21004		SB21005			SB22006		
		Sample Date	8/18/2022		8/18/2022			8/19/2022		
		Sample ID	LORNG_SB21004_0-1_08182022FD	LORNG_SB21004_2-3_08182022	LORNG_SB21005_0-1_08182022	LORNG_SB21005_0-1_08182022FD	LORNG_SB21005_6-7_08182022	LORNG_SB22006_0-1_08192022	LORNG_SB22006_8-10_08192022
		QC Code	FD	N	N	FD	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	2.3 U	0.61 J	1.1 U	1.1 U	14.5	0.99 J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	2.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.3 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312											
			Location	SB21004		SB21005				SB22006					
			Sample Date	8/18/2022		8/18/2022				8/19/2022					
			Sample ID	LORNG_SB21004_0-1_08182022FD		LORNG_SB21004_2-3_08182022		LORNG_SB21005_0-1_08182022		LORNG_SB21005_0-1_08182022FD		LORNG_SB21005_6-7_08182022		LORNG_SB22006_0-1_08192022		LORNG_SB22006_8-10_08192022	
			QC Code	FD		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	2.3	U	1.2	U	1.1	U	1.1	U	1.3	U	1.3	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	2.3	U	1.2	U	1.1	U	1.1	U	1.3	U	1.3	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98312							
		Location	SB22007		SB22009			SB22010		
		Sample Date	8/19/2022		8/19/2022			8/19/2022		
		Sample ID	LORNG_SB22007_0-1_08192022	LORNG_SB22007_8-10_08192022	LORNG_SB22009_0-1_08192022	LORNG_SB22009_8-10_08192022	LORNG_SB22009_8-10_08192022FD	LORNG_SB22010_0-1_08192022	LORNG_SB22010_8-10_08192022
		QC Code	N	N	N	N	FD	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	0.98 J	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	15.4	1.9 U	1.8 J	2.1 J	1.7 J	5.2	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.9 U	1.2 U	2.4 U	2.5 U	1.2 U	1.1 U

Prepared by: AKN
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312											
			Location	SB22007		SB22009				SB22010					
			Sample Date	8/19/2022		8/19/2022				8/19/2022					
			Sample ID	LORNG_SB22007_0-1_08192022		LORNG_SB22007_8-10_08192022		LORNG_SB22009_0-1_08192022		LORNG_SB22009_8-10_08192022		LORNG_SB22009_8-10_08192022FD		LORNG_SB22010_0-1_08192022		LORNG_SB22010_8-10_08192022	
			QC Code	N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.9	U	1.2	U	2.4	U	2.5	U	1.2	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.9	U	1.2	U	2.4	U	2.5	U	1.2	U	1.1	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312		FA98345					
			Location	SB22011		SB07016		SB07017			
			Sample Date	8/19/2022		8/20/2022		8/20/2022			
			Sample ID	LORNG_SB22011_0-1_08192022	LORNG_SB22011_6-7_08192022	LORNG_SB07016_0-1_08202022	LORNG_SB07016_8-10_08202022	LORNG_SB07017_0-1_08202022	LORNG_SB07017_0-1_08202022FD	LORNG_SB07017_8-10_08202022	
			QC Code	N	N	N	N	N	FD	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.1 U	0.96 J	1.1 U	1.2 U	1.1 U	1.1 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.1 U	0.63 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.1 U	1.4 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	1.1 U	1 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.1 U	0.69 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.61 J	1.1 U	24.3	5.8	3.7	2.9	1.1 U	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.1 U	0.98 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.1 U	1.1 J	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312		FA98345					
			Location	SB22011		SB07016		SB07017			
			Sample Date	8/19/2022		8/20/2022		8/20/2022			
			Sample ID	LORNG_SB22011_0-1_08192022	LORNG_SB22011_6-7_08192022	LORNG_SB07016_0-1_08202022	LORNG_SB07016_8-10_08202022	LORNG_SB07017_0-1_08202022	LORNG_SB07017_0-1_08202022FD	LORNG_SB07017_8-10_08202022	
			QC Code	N	N	N	N	N	FD	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98345							
		Location	SB07018			SB07019				
		Sample Date	8/20/2022			8/19/2022				
		Sample ID	LORNG_SB07018_0-1_08202022	LORNG_SB07018_8-10_08202022	LORNG_SB07018_8-10_08202022FD	LORNG_SB07019_0-1_08192022	LORNG_SB07019_8-9_08192022	LORNG_SB07019_8-9_08192022FD	LORNG_SB07019_9-10_08192022	
		QC Code	N	N	FD	N	N	FD	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.2 UJ	6 UJ	1.1 U	1.1 U	1.1 U	1.2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.8 J	2.3 J	1.1 U	1.1 U	1.1 U	1.2 J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.2 UJ	6 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	7.5	1.2 U	1.2 U	1.3 J	1.1 U	1.1 U	5.7
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	0.72 J	0.89 J	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98345												
			Location	SB07018					SB07019							
			Sample Date	8/20/2022					8/19/2022							
			Sample ID	LORNG_SB07018_0-1_08202022		LORNG_SB07018_8-10_08202022		LORNG_SB07018_8-10_08202022FD		LORNG_SB07019_0-1_08192022		LORNG_SB07019_8-9_08192022		LORNG_SB07019_8-9_08192022FD		LORNG_SB07019_9-10_08192022	
			QC Code	N		N		FD		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.2	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.2	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98345									
		Location	SB07020	SB07021			SB07022		SB07023			
		Sample Date	8/19/2022	8/20/2022			8/20/2022		8/20/2022			
		Sample ID	LORNG_SB07020_0-1_08192022	LORNG_SB07021_0-1_08202022		LORNG_SB07021_8-10_08202022	LORNG_SB07021_8-10_08202022FD		LORNG_SB07022_0-1_08202022		LORNG_SB07022_8-10_08202022	LORNG_SB07023_0-1_08202022	
		QC Code	N	N		N	FD		N		N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	0.76	J	1.1	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	0.73	J	1.1	U	1.1	U	2	J	1.1	U	0.58	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	0.75	J	1.1	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	J	1.1	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1	U	9.9		1.1	U	1.1	U	36.2		1.1	U	14.2	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	0.57	J	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98345							
			Location	SB07020	SB07021			SB07022		SB07023	
			Sample Date	8/19/2022	8/20/2022			8/20/2022		8/20/2022	
			Sample ID	LORNG_SB07020_0-1_08192022	LORNG_SB07021_0-1_08202022	LORNG_SB07021_8-10_08202022	LORNG_SB07021_8-10_08202022FD	LORNG_SB07022_0-1_08202022	LORNG_SB07022_8-10_08202022	LORNG_SB07023_0-1_08202022	
			QC Code	N	N	N	FD	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98345							
		Location	SB07023	SB07024			SB07025		SB18031	
		Sample Date	8/20/2022	8/20/2022			8/20/2022		8/19/2022	
		Sample ID	LORNG_SB07023_7-8_08202022	LORNG_SB07024_0-1_08202022	LORNG_SB07024_0-1_08202022FD	LORNG_SB07024_8-10_08202022	LORNG_SB07025_0-1_08202022	LORNG_SB07025_8-10_08202022	LORNG_SB18031_0-1_08192022	
		QC Code	N	N	FD	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.9 J	1.1 U	1.2 U	1.4 J	2.7	4.4	1.2 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 J	1.1 U	1.2 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.2 U	12.8	12.8	1.1 U	112	1.1 U	1.2 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 J	0.62 J	1.1 J	1.2 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	0.82 J	1.1 U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U

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Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98345							
			Location	SB07023	SB07024			SB07025		SB18031	
			Sample Date	8/20/2022	8/20/2022			8/20/2022		8/19/2022	
			Sample ID	LORNG_SB07023_7-8_08202022	LORNG_SB07024_0-1_08202022	LORNG_SB07024_0-1_08202022FD	LORNG_SB07024_8-10_08202022	LORNG_SB07025_0-1_08202022	LORNG_SB07025_8-10_08202022	LORNG_SB18031_0-1_08192022	
			QC Code	N	N	FD	N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98345				FA98980		
		Location	SB18031	SB18032			SB01017	SB01018	
		Sample Date	8/19/2022	8/19/2022			9/14/2022	9/14/2022	
		Sample ID	LORNG_SB18031_7-8_08192022	LORNG_SB18032_0-1_08192022	LORNG_SB18032_0-1_08192022FD	LORNG_SB18032_7-8_08192022	LORNG_SB01017_0-1_09142022	LORNG_SB01018_0-1_09142022	LORNG_SB01018_1-2_09142022
		QC Code	N	N	FD	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.9 J	0.89 J	2 J
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 J
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	0.85 J	0.67 J	2.1 J
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.8 J	1.4 J	5.1
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	0.79 J	1.2 U	1.3 J
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 J	2.2 J
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	0.6 J	1.2 U	1.2 J
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.1 J	1.2 J	2.3 J
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.2 U	2.8	2.3	1.2 U	26.7 J	17.7	46
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.7 J	0.68 J	2.7 J
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.3 J	1.4 J	4.1
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98345				FA98980		
			Location	SB18031	SB18032			SB01017	SB01018	
			Sample Date	8/19/2022	8/19/2022			9/14/2022	9/14/2022	
			Sample ID	LORNG_SB18031_7-8_08192022	LORNG_SB18032_0-1_08192022	LORNG_SB18032_0-1_08192022FD	LORNG_SB18032_7-8_08192022	LORNG_SB01017_0-1_09142022	LORNG_SB01018_0-1_09142022	LORNG_SB01018_1-2_09142022
			QC Code	N	N	FD	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2 U	1.2 U	1.2 U	1.2 U	0.59 J	1.2 U	1.5 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98980											
		Location	SB01021		SB01023		SB01024		SB01027		SB01028		SB01029	
		Sample Date	9/14/2022		9/14/2022		9/14/2022		9/14/2022		9/14/2022		9/14/2022	
		Sample ID	LORNG_SB01021_0-1_09142022		LORNG_SB01023_0-1_09142022		LORNG_SB01024_0-1_09142022		LORNG_SB01027_0-1_09142022		LORNG_SB01028_0-1_09142022		LORNG_SB01029_0-1_09142022	LORNG_SB01029_1-2_09142022
		QC Code	N		N		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.4	U	1.3	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	2.9		1.4	U	1.3	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	4.5		1.4	U	1.3	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	6.4	UJ	5.9	UJ	1.2	U	1.2	UJ	1.2	U	1.4	U	6.4	UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.9	J	1.4	U	1.3	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	6.4	UJ	5.9	UJ	1.2	U	1.2	UJ	6	UJ	1.4	U	6.4	UJ
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	0.67	J	1.4	U	1.3	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3	U	1.2	U	1.2	U	1.8	J	1.2	J	1.4	U	1.3	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	5.6		1.4	U	1.3	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	0.64	J	1.4	U	1.3	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.1	J	1.4	U	1.3	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	0.62	J	1.4	U	1.3	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3	U	1.2	U	1.2	U	1.3	J	1.4	J	1.4	U	0.98	J
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.88	J	0.76	J	1.4	J	1.4	J	19.7		1.5	J	1.6	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3	U	1.2	U	1.2	U	2	J	3.5		1.4	U	2.1	J
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.3	J	1.4	U	1.3	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.3	U	1.2	U	1.2	U	1.4	J	1	J	1.4	U	1.3	J
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3	U	1.2	U	1.4	J	1.2	U	144		1.4	U	1.3	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.5		18		15.5		31.6		84.2		12.2		21.4	
		Perfluorooctanoic acid (PFOA)	UG/KG	2	J	1.2	U	0.65	J	2.4	J	6.6		1.4	U	1.7	J
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	0.65	J	1.4	U	1.3	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3	U	0.69	J	0.65	J	3		2.6		1.4	U	1.7	J
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.4	U	1.3	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98980											
			Location	SB01021		SB01023		SB01024		SB01027		SB01028		SB01029	
			Sample Date	9/14/2022		9/14/2022		9/14/2022		9/14/2022		9/14/2022		9/14/2022	
			Sample ID	LORNG_SB01021_0-1_09142022		LORNG_SB01023_0-1_09142022		LORNG_SB01024_0-1_09142022		LORNG_SB01027_0-1_09142022		LORNG_SB01028_0-1_09142022		LORNG_SB01029_0-1_09142022	LORNG_SB01029_1-2_09142022
			QC Code	N		N		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.4	U	1.3	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3	U	1.2	U	1.2	U	1.2	U	1.3	J	1.4	U	1.3	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

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R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98980																			
			Location	SB05026		SB05027				SB05030		SB06016		SB06017		SB12012							
			Sample Date	9/13/2022		9/13/2022				9/13/2022		9/13/2022		9/13/2022		9/13/2022							
			Sample ID	LORNG_SB05026_0-1_09132022		LORNG_SB05027_0-1_09132022		LORNG_SB05027_1-2_09132022		LORNG_SB05030_0-1_09132022		LORNG_SB06016_0-1_09132022		LORNG_SB06017_0-1_09132022		LORNG_SB12012_0-1_09132022							
			QC Code	N		N		N		N		N		N		N							
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier						
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	11	UJ	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	2.4	J	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorobutanoic acid (PFBA)	UG/KG	3.5	J	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorodecane sulfonate (PFDS)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorodecanoic acid (PFDA)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorododecanoic acid (PFDoA)	UG/KG	11	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	9.3		1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.9	J	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	94.1		1.2	U	1.1	U	0.85	J	1.2	U	0.61	J	0.77	J						
		Perfluorohexanoic acid (PFHxA)	UG/KG	2.2	J	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorononanesulfonic acid (PFNS)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorononanoic acid (PFNA)	UG/KG	6.1		1.2	U	1.1	U	0.57	J	1.2	U	1.1	U	1.2	U						
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	11	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	407		6.7		0.98	J	23.7		14.3		9.2		23.2							
		Perfluorooctanoic acid (PFOA)	UG/KG	10.7		1.2	U	1.1	U	1	J	1.2	U	1.1	U	1.2	U						
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	4.4		1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						
		Perfluoropentanoic acid (PFPeA)	UG/KG	4.9		1.2	U	1.1	U	0.57	J	1.2	U	1.1	U	0.82	J						
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U						

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98980															
			Location	SB05026		SB05027				SB05030		SB06016		SB06017		SB12012			
			Sample Date	9/13/2022		9/13/2022				9/13/2022		9/13/2022		9/13/2022		9/13/2022			
			Sample ID	LORNG_SB05026_0-1_09132022		LORNG_SB05027_0-1_09132022		LORNG_SB05027_1-2_09132022		LORNG_SB05030_0-1_09132022		LORNG_SB06016_0-1_09132022		LORNG_SB06017_0-1_09132022		LORNG_SB12012_0-1_09132022			
			QC Code	N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	11	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U		
		Perfluoroundecanoic acid (PFUnA)	UG/KG	2.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U		

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98980									
		Location	SB12013		SB19006		SB19007		SB19008		SB21003	
		Sample Date	9/13/2022		9/13/2022		9/13/2022		9/13/2022		9/13/2022	
		Sample ID	LORNG_SB12013_0-1_09132022		LORNG_SB12013_1-2_09132022		LORNG_SB19006_0-1_09132022		LORNG_SB19007_0-1_09132022		LORNG_SB19008_0-1_09132022	
		QC Code	N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	5.9	UJ	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2	U	2.1	U	1.3	UJ	1.1	U	1.1	U	1.4	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	5.9	UJ	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2	U	3.5	J	1.3	U	1.1	U	1.1	U	0.82	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.9		191		1.3	U	0.69	J	3.6		11.1	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA98980													
Location				SB12013				SB19006		SB19007		SB19008		SB21003			
Sample Date				9/13/2022				9/13/2022		9/13/2022		9/13/2022		9/13/2022			
Sample ID				LORNG_SB12013_0-1_09132022		LORNG_SB12013_1-2_09132022		LORNG_SB19006_0-1_09132022		LORNG_SB19007_0-1_09132022		LORNG_SB19008_0-1_09132022		LORNG_SB21003_0-1_09132022			
QC Code				N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U		
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	2.1	U	1.3	U	1.1	U	1.1	U	1.4	U		

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectiv

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97849		FA97926	FA97959		FA98012	FA98221
		Location	FIELDQC		FIELDQC	FIELDQC		FIELDQC	FIELDQC
		Sample Date	8/2/2022	8/3/2022	8/4/2022	8/5/2022		8/8/2022	8/16/2022
		Sample ID	LORNG_EB137_08022022	LORNG_EB138_08032022	LORNG_EB129_08042022	LORNG_EB220_08052022	LORNG_EB221_08052022	LORNG_EB130_08082022	LORNG_EB222_08162022
		QC Code	EB	EB	EB	EB	EB	EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 U	4 U	3.7 U	19 U	4 U	19 U	3.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	4 U	3.7 U	3.7 U	4 U	4 U	8.9
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	2 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.1 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U

Notes:

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Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97849		FA97849		FA97926		FA97959		FA97959		FA98012		FA98221	
			Location	FIELDQC		FIELDQC		FIELDQC		FIELDQC		FIELDQC		FIELDQC		FIELDQC	
			Sample Date	8/2/2022		8/3/2022		8/4/2022		8/5/2022		8/5/2022		8/8/2022		8/16/2022	
			Sample ID	LORNG_EB137_08022022		LORNG_EB138_08032022		LORNG_EB129_08042022		LORNG_EB220_08052022		LORNG_EB221_08052022		LORNG_EB130_08082022		LORNG_EB222_08162022	
			QC Code	EB		EB		EB		EB		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98221			FA98280		
		Location	FIELDQC			FIELDQC		
		Sample Date	8/16/2022	8/17/2022		8/18/2022		
		Sample ID	LORNG_EB224_08162022	LORNG_EB223_08172022	LORNG_EB225_08172022	LORNG_EB226_08182022	LORNG_EB227_08182022	LORNG_EB228_08182022
		QC Code	EB	EB	EB	EB	EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 U	3.7 U	3.7 U	3.9 U	37 U	19 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	19 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	9.3 U	1.9 U	2 U	19 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	19 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	9.3 U	1.9 U	2 U	19 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	2 U	19 U	1.9 U

Notes:
N = Normal Field Sample; FD = Field Duplicate

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA98221						FA98280					
Location				FIELDQC						FIELDQC					
Sample Date				8/16/2022		8/17/2022				8/18/2022					
Sample ID				LORNG_EB224_08162022		LORNG_EB223_08172022		LORNG_EB225_08172022		LORNG_EB226_08182022		LORNG_EB227_08182022		LORNG_EB228_08182022	
QC Code				EB		EB		EB		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA98312					FA98345					FA98980			
		Location		FIELDQC					FIELDQC					FIELDQC			
		Sample Date		8/19/2022					8/19/2022		8/20/2022			9/14/2022			
		Sample ID		LORNG_EB229_08192022		LORNG_EB230_08192022		LORNG_EB231_08192022	LORNG_EB232_08192022		LORNG_EB233_08202022		LORNG_EB234_08202022	LORNG_EB235_09142022		LORNG_EB236_09142022	
		QC Code		EB		EB		EB	EB		EB		EB	EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.7	U	3.7 U	3.7	U	3.7	U	3.7 U	3.7	U	4	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	9.3	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	9.3 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	1.9 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	9.3	U	9.3	U	9.3 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	9.3 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	9.3 U	1.9	U	1.9	U	1.9 U	1.9	U	2	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98312						FA98345						FA98980			
			Location	FIELDQC						FIELDQC						FIELDQC			
			Sample Date	8/19/2022						8/19/2022		8/20/2022				9/14/2022			
			Sample ID	LORNG_EB229_08192022		LORNG_EB230_08192022		LORNG_EB231_08192022		LORNG_EB232_08192022		LORNG_EB233_08202022		LORNG_EB234_08202022		LORNG_EB235_09142022		LORNG_EB236_09142022	
			QC Code	EB		EB		EB		EB		EB		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/13/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	200-64482		200-64483				SP4213					SP4245	
		Location	SB06006		SB01006		SB12009		FIELDQC	SB06006		SB10010		FIELDQC	SB
		Sample Date	8/2/2022		8/4/2022		8/4/2022		8/3/2022	8/2/2022		8/2/2022		8/4/2022	8/4
		Sample ID	LORNG_SB06006_0-1_08022022_E	LORNG_SB06006_7.5-8.5_8022022E	LORNG_SB01006_0-1_08042022_E	LORNG_SB01006_8-10_08042022_E	LORNG_SB12009_0-1_08042022_E	LORNG_SB12009_8-10_08042022_E	LORNG_TB10_08032022	LORNG_SB06006_0-1_08022022_K	LORNG_SB06006_7.5-8.5_8022022K	LORNG_SB10010_0-1_08022022_K	LORNG_SB10010_8-10_08022022_K	LORNG_TB11_08042022	LORNG_SB01006_0-1_08042022_K
		QC Code	N	N	N	N	N	N	TB	N	N	N	N	TB	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1,1-TRICHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1,2,2-TETRACHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1,2-TRICHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1-DICHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1-DICHLOROETHENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,1-DICHLOROPROPENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2,3-TRICHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2,3-TRICHLOROPROPANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2,4-TRICHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2,4-TRIMETHYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2-DICHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2-DICHLOROETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,2-DICHLOROPROPANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,3-DICHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,3-DICHLOROPROPANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		1,4-DICHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		2,2-DICHLOROPROPANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		2-CHLOROTOLUENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		2-HEXANONE	UG/KG							12 U	11 U	19 U	12 U	9.7 U	12 U	12 U
		4-CHLOROTOLUENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		ACETONE	UG/KG							12 U	11 U	19 U	12 U	9.7 U	12 U	12 U
		BENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		BROMOBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		BROMOCHLOROMETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		BROMODICHLOROMETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		BROMOFORM	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		BROMOMETHANE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
		CARBON DISULFIDE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CARBON TETRACHLORIDE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CHLOROBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CHLOROETHANE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
		CHLOROFORM	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CHLOROMETHANE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
		CIS-1,2-DICHLOROETHYLENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CIS-1,3-DICHLOROPROPENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		CYCLOHEXANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		DIBROMOCHLOROMETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		DIBROMOMETHANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		DICHLORODIFLUOROMETHANE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-64482		200-64483				SP4213					SP4245	
			Location	SB06006		SB01006		SB12009		FIELDQC	SB06006		SB10010		FIELDQC	SB
			Sample Date	8/2/2022		8/4/2022		8/4/2022		8/3/2022	8/2/2022		8/2/2022		8/4/2022	8/4
			Sample ID	LORNG_SB06006_0-1_08022022_E	LORNG_SB06006_7.5-8.5_8022022E	LORNG_SB01006_0-1_08042022_E	LORNG_SB01006_8-10_08042022_E	LORNG_SB12009_0-1_08042022_E	LORNG_SB12009_8-10_08042022_E	LORNG_TB10_08032022	LORNG_SB06006_0-1_08022022_K	LORNG_SB06006_7.5-8.5_8022022K	LORNG_SB10010_0-1_08022022_K	LORNG_SB10010_8-10_08022022_K	LORNG_TB11_08042022	LORNG_SB01006_0-1_08042022_K
			QC Code	N	N	N	N	N	N	TB	N	N	N	N	TB	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	ETHYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		HEXACHLOROBUTADIENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		IODOMETHANE (METHYL IODIDE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		ISOPROPYLBENZENE (CUMENE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
		METHYL ACETATE	UG/KG							3 U	2.7 U	4.5 U	2.8 U	2.3 U	3 U	3 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG							12 U	11 U	19 U	12 U	9.7 U	12 U	12 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG							12 U	11 U	19 U	12 U	9.7 U	12 U	12 U
		METHYLCYCLOHEXANE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		METHYLENE CHLORIDE	UG/KG							12 U	11 U	19 U	12 U	9.7 U	12 U	12 U
		NAPHTHALENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		N-BUTYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		N-PROPYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		SEC-BUTYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		STYRENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		T-BUTYLBENZENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TERT-BUTYL METHYL ETHER	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TETRACHLOROETHYLENE(PCE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TOLUENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TRANS-1,2-DICHLOROETHENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TRANS-1,3-DICHLOROPROPENE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TRICHLOROETHYLENE (TCE)	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		TRICHLOROFLUOROMETHANE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
		VINYL ACETATE	UG/KG							2.5 U	2.2 U	3.8 U	2.3 U	1.9 U	2.5 U	2.5 U
		VINYL CHLORIDE	UG/KG							5 U	4.4 U	7.5 U	4.6 U	3.9 U	5 U	5 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG													60 U
		2-METHYLNAPHTHALENE	UG/KG								8.7 J	14 U	24	10 U		12 U
		ACENAPHTHENE	UG/KG								10 U	14 U	140	10 U		12 U
		ACENAPHTHYLENE	UG/KG								10 U	14 U	11 U	10 U		12 U
		ANTHRACENE	UG/KG								14 J	14 U	290	10 U		12 U
		BENZO(A)ANTHRACENE	UG/KG								90 J	14 U	810	10 UJ		12 U
		BENZO(A)PYRENE	UG/KG								10 UJ	14 U	880	10 UJ		12 U
		BENZO(B)FLUORANTHENE	UG/KG								10 UJ	14 U	1,200	10 UJ		12 U
		BENZO(G,H,I)PERYLENE	UG/KG								10 UJ	14 U	470	10 UJ		12 U
		BENZO(K)FLUORANTHENE	UG/KG								10 UJ	14 U	430	10 UJ		12 UJ
		CHRYSENE	UG/KG								110 J	14 U	920	10 UJ		12 U
		DIBENZ(A,H)ANTHRACENE	UG/KG								10 UJ	14 U	140	10 UJ		12 U
		FLUORANTHENE	UG/KG								150 J	14 U	2,100	10 U		12 U
		FLUORENE	UG/KG								3.8 J	14 U	130	10 U		12 U
		INDENO(1,2,3-C,D)PYRENE	UG/KG								10 UJ	14 U	600	10 UJ		12 U
		NAPHTHALENE	UG/KG								10 U	14 U	11 U	10 U		12 U
		PENTACHLOROPHENOL	UG/KG								51 UJ	72 UJ	54 U	51 UJ		60 U
		PHENANTHRENE	UG/KG								76 J	14 U	1,600	10 U		12 U

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-64482		200-64483				SP4213					SP4245	
			Location	SB06006		SB01006		SB12009		FIELDQC	SB06006		SB10010		FIELDQC	SB(
			Sample Date	8/2/2022		8/4/2022		8/4/2022		8/3/2022	8/2/2022		8/2/2022		8/4/2022	8/4
			Sample ID	LORNG_SB06006_0-1_08022022_E	LORNG_SB06006_7.5-8.5_8022022E	LORNG_SB01006_0-1_08042022_E	LORNG_SB01006_8-10_08042022_E	LORNG_SB12009_0-1_08042022_E	LORNG_SB12009_8-10_08042022_E	LORNG_TB10_08032022	LORNG_SB06006_0-1_08022022_K	LORNG_SB06006_7.5-8.5_8022022K	LORNG_SB10010_0-1_08022022_K	LORNG_SB10010_8-10_08022022_K	LORNG_TB11_08042022	LORNG_SB01006_0-1_08042022_K
			QC Code	N	N	N	N	N	N	TB	N	N	N	N	TB	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		PYRENE	UG/KG								170 J	14 U	1,400	10 UJ		12 UJ
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		1,2-DICHLOROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		1,2-DIPHENYLHYDRAZINE	UG/KG								500 U	710 U	530 U	500 UJ		600 U
		1,3-DICHLOROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		1,4-DICHLOROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		1-METHYLNAPHTHALENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG								250 UJ	360 UJ	270 UJ	250 UJ		300 U
		2,3,4,6-TETRACHLOROPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		2,4,5-TRICHLOROPHENOL	UG/KG								620 U	880 U	660 U	620 U		740 U
		2,4,6-TRICHLOROPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		2,4-DICHLOROPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		2,4-DIMETHYLPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		2,4-DINITROPHENOL	UG/KG								620 UJ	880 UJ	660 UJ	620 UJ		740 U
		2,4-DINITROTOLUENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		2,6-DINITROTOLUENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		2-CHLORONAPHTHALENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		2-CHLOROPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		2-METHYLPHENOL (O-CRESOL)	UG/KG								250 U	360 U	270 U	250 U		300 U
		2-NITROANILINE	UG/KG								620 U	880 U	660 U	620 UJ		740 U
		2-NITROPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		3,3'-DICHLOROBENZIDINE	UG/KG								250 UJ	360 UJ	270 UJ	250 UJ		300 U
		3-NITROANILINE	UG/KG								620 U	880 U	660 U	620 UJ		740 U
		4,6-DINITRO-2-METHYLPHENOL	UG/KG								620 U	880 U	660 U	620 U		740 U
		4-BROMOPHENYL PHENYL ETHER	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		4-CHLORO-3-METHYLPHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
		4-CHLOROANILINE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		4-CHLOROPHENYL PHENYL ETHER	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		4-NITROANILINE	UG/KG								620 U	880 U	660 U	620 UJ		740 U
		4-NITROPHENOL	UG/KG								620 UJ	880 UJ	660 UJ	620 UJ		740 U
		BENZALDEHYDE	UG/KG								190 J	360 UJ	210 J	250 UJ		1,300 J
		BENZIDINE	UG/KG								1,100 R	1,600 R	1,200 R	1,100 R		1,400 U
		BENZOIC ACID	UG/KG								620 UJ	880 UJ	660 UJ	620 UJ		740 U
		BENZYL ALCOHOL	UG/KG								200 J	130 J	530 U	500 U		130 J
		BENZYL BUTYL PHTHALATE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		BIPHENYL (DIPHENYL)	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		BIS(2-CHLOROETHOXY) METHANE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG								120 J	360 U	270 U	250 UJ		300 U
		CARBAZOLE	UG/KG								250 U	360 U	160 J	250 UJ		300 U
		CRESOLS, M & P	UG/KG								250 U	360 U	270 U	250 U		300 U
		DIBENZOFURAN	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		DIETHYL PHTHALATE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		DIMETHYL PHTHALATE	UG/KG								250 U	360 U	270 U	250 UJ		300 U

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Former Loring Air Force Base, Limestone, Maine

			SDG	200-64482		200-64483				SP4213					SP4245	
			Location	SB06006		SB01006		SB12009		FIELDQC	SB06006		SB10010		FIELDQC	SB
			Sample Date	8/2/2022		8/4/2022		8/4/2022		8/3/2022	8/2/2022		8/2/2022		8/4/2022	8/4
			Sample ID	LORNG_SB06006_0-1_08022022_E	LORNG_SB06006_7.5-8.5_8022022E	LORNG_SB01006_0-1_08042022_E	LORNG_SB01006_8-10_08042022_E	LORNG_SB12009_0-1_08042022_E	LORNG_SB12009_8-10_08042022_E	LORNG_TB10_08032022	LORNG_SB06006_0-1_08022022_K	LORNG_SB06006_7.5-8.5_8022022K	LORNG_SB10010_0-1_08022022_K	LORNG_SB10010_8-10_08022022_K	LORNG_TB11_08042022	LORNG_SB01006_0-1_08042022_K
			QC Code	N	N	N	N	N	N	TB	N	N	N	N	TB	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		DI-N-BUTYL PHTHALATE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		DI-N-OCTYLPHTHALATE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
SVOCs	T	HEXACHLOROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		HEXACHLOROBUTADIENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		HEXACHLOROCYCLOPENTADIENE	UG/KG								250 UJ	360 UJ	270 UJ	250 UJ		300 U
		HEXACHLOROETHANE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		ISOPHORONE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		NITROBENZENE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		N-NITROSODIMETHYLAMINE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		N-NITROSODI-N-PROPYLAMINE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		N-NITROSODIPHENYLAMINE	UG/KG								250 U	360 U	270 U	250 UJ		300 U
		PHENOL	UG/KG								250 U	360 U	270 U	250 U		300 U
PCBs	T	PCB, TOTAL	UG/KG								80 U	110 UJ				95 U
		PCB-1016 (AROCLOR 1016)	UG/KG								8.7 UJ	12 UJ				10 U
		PCB-1221 (AROCLOR 1221)	UG/KG								8.7 UJ	12 UJ				10 U
		PCB-1232 (AROCLOR 1232)	UG/KG								10 UJ	14 UJ				12 U
		PCB-1242 (AROCLOR 1242)	UG/KG								8.7 UJ	12 UJ				10 U
		PCB-1248 (AROCLOR 1248)	UG/KG								8.7 U	12 UJ				10 U
		PCB-1254 (AROCLOR 1254)	UG/KG								8.7 U	12 UJ				10 U
		PCB-1260 (AROCLOR 1260)	UG/KG								8.7 U	12 UJ				10 U
		PCB-1262 (AROCLOR 1262)	UG/KG								8.7 U	12 UJ				10 U
		PCB-1268 (AROCLOR 1268)	UG/KG								8.7 U	12 UJ				10 U
Pesticides	T	ALDRIN	UG/KG								0.87 U	1.2 U				1 U
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG								0.87 U	1.2 U				1 U
		ALPHA ENDOSULFAN	UG/KG								0.87 U	1.2 U				1 U
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG								0.87 U	1.2 U				1 U
		BETA ENDOSULFAN	UG/KG								1.7 U	2.4 U				2 U
		CIS-CHLORDANE	UG/KG								0.87 U	1.2 U				1 U
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG								0.87 U	1.2 U				1 U
		DIELDRIN	UG/KG								1.7 U	2.4 U				2 U
		ENDOSULFAN SULFATE	UG/KG								1.7 U	2.4 U				2 U
		ENDRIN	UG/KG								1.7 U	2.4 U				2 U
		ENDRIN ALDEHYDE	UG/KG								1.7 U	2.4 U				2 U
		ENDRIN KETONE	UG/KG								1.7 U	2.4 U				1.8 J
		GAMMA BHC (LINDANE)	UG/KG								0.87 U	1.2 U				1 U
		GAMMA-CHLORDANE	UG/KG								0.87 U	1.2 U				1 U
		HEPTACHLOR	UG/KG								0.87 U	1.2 U				1 U
		HEPTACHLOR EPOXIDE	UG/KG								0.87 U	1.2 U				1 U
		METHOXYCHLOR	UG/KG								8.7 U	12 UJ				10 U
		P,P'-DDD	UG/KG								1 J	2.4 U				1.7 J
		P,P'-DDE	UG/KG								3.8	2.4 U				3.2 J
		P,P'-DDT	UG/KG								14	2.4 U				10
		TOXAPHENE	UG/KG								17 UJ	24 U				20 U

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Former Loring Air Force Base, Limestone, Maine

			SDG	200-64482		200-64483				SP4213					SP4245	
			Location	SB06006		SB01006		SB12009		FIELDQC	SB06006		SB10010		FIELDQC	SB
			Sample Date	8/2/2022		8/4/2022		8/4/2022		8/3/2022	8/2/2022		8/2/2022		8/4/2022	8/4
			Sample ID	LORNG_SB06006_0-1_08022022_E	LORNG_SB06006_7.5-8.5_8022022E	LORNG_SB01006_0-1_08042022_E	LORNG_SB01006_8-10_08042022_E	LORNG_SB12009_0-1_08042022_E	LORNG_SB12009_8-10_08042022_E	LORNG_TB10_08032022	LORNG_SB06006_0-1_08022022_K	LORNG_SB06006_7.5-8.5_8022022K	LORNG_SB10010_0-1_08022022_K	LORNG_SB10010_8-10_08022022_K	LORNG_TB11_08042022	LORNG_SB01006_0-1_08042022_K
			QC Code	N	N	N	N	N	N	TB	N	N	N	N	TB	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	T	ALUMINUM	MG/KG								15,100	16,800	17,400 J	16,000		19,700
		ANTIMONY	MG/KG								0.16 J	0.17 J	0.16 J	0.29 J		0.32 J
		ARSENIC	MG/KG								5.72	3.94	6.16	7.79		5.22
		BARIUM	MG/KG								37.5	36.9	116	54.6		44.4
		BERYLLIUM	MG/KG								0.499	1.07	0.522	0.513		0.402 J
		CADMIUM	MG/KG								0.063 J	0.072 J	0.332 J	0.5 U		0.49 U
		CALCIUM	MG/KG								37,600	96,900	15,600 J	6,390		2,320
		CHROMIUM, TOTAL	MG/KG								29.7	43.9	39.6 J	34.5		31.5
		COBALT	MG/KG								9.58	15.7	12.1	12.9		9.83
		COPPER	MG/KG								20.5	24.5	21.4	21.8		21.3
		IRON	MG/KG								29,100	34,300	29,800	32,400		31,100
		LEAD	MG/KG								25.5	10.5	41 J	12.2		15.5
		MAGNESIUM	MG/KG								8,250	13,900	8,480 J	7,860		6,230
		MANGANESE	MG/KG								569	595	756	603		506
		MERCURY	MG/KG								0.016 J	0.035 J	0.04	0.027 J		0.049
		NICKEL	MG/KG								38.9	73.9	41.4 J	43.1		30.7
		POTASSIUM	MG/KG								1,240	1,470	1,160 J	1,490		1140
		SELENIUM	MG/KG								0.49 J	1 U	0.37 J	0.54 J		0.97 J
		SILVER	MG/KG								0.764 J	0.656 J	0.619 J	0.716 J		0.87 J
		SODIUM	MG/KG								61.1 U	48.2 U	47.2 U	61.4 U		41 U
		THALLIUM	MG/KG								0.51 J	0.28 J	0.44 J	0.43 J		0.49 J
		VANADIUM	MG/KG								41.4	19.5	25.7	25.3		28.1
		ZINC	MG/KG								56.9	65.7	63 J	62.7		65.8
WetChem	T	SOLIDS, PERCENT	PERCENT	82.8	79.1	79.8	88.6	91.3	89.6		95	69	92	91		80
		TOTAL ORGANIC CARBON	UG/G								26,000	3,200	12,000	1,000		22,000
Perchlorate	T	PERCHLORATE	UG/KG	0.48 U	0.49 U	0.49 U	0.45 U	0.43 U	0.44 U							

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
T = total
TB = trip blank

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4245					SP4277		SP4279		SP4287			
			Location	01006	SB07015		SB12009		SB17008		SB18027		FIELDQC	SB05016		SB05016
			Sample Date	/2022	8/4/2022		8/4/2022		8/4/2022		8/5/2022		8/6/2022	8/5/2022		8/5/2022
			Sample ID	LORNG_SB01006_8-10_08042022_K	LORNG_SB07015_0-1_08042022_K	LORNG_SB07015_8-10_08042022_K	LORNG_SB12009_0-1_08042022_K	LORNG_SB12009_8-10_08042022_K	LORNG_SB17008_0-1_08042022_K	LORNG_SB17008_8-10_08042022_K	LORNG_SB18027_0-1_08052022_K	LORNG_SB18027_8-10_08052022_K	LORNG_TB12_08062022	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	LORNG_SB05016_5-7_08052022_K
			QC Code	N	N	N	N	N	N	N	N	N	TB	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		1,1,1,2-TETRACHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1,1-TRICHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1,2,2-TETRACHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1,2-TRICHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1-DICHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1-DICHLOROETHENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,1-DICHLOROPROPENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2,3-TRICHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2,3-TRICHLOROPROPANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2,4-TRICHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2,4-TRIMETHYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2-DICHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2-DICHLOROETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,2-DICHLOROPROPANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,3-DICHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,3-DICHLOROPROPANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		1,4-DICHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
VOCs	T	2,2-DICHLOROPROPANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		2-CHLOROTOLUENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		2-HEXANONE	UG/KG	11 U	16 U	11 U	9.3 U	8.2 U					12 U	12 U	11 UJ	9.5 U
		4-CHLOROTOLUENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		ACETONE	UG/KG	6 J	16 U	92	9.3 U	8.2 U					12 U	12 UJ	59 J	9.5 U
		BENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		BROMOBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		BROMOCHLOROMETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	3.6 J	1.9 U
		BROMODICHLOROMETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		BROMOFORM	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		BROMOMETHANE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
		CARBON DISULFIDE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	0.84 J	2.8 J	1.9 U
		CARBON TETRACHLORIDE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		CHLOROBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		CHLOROETHANE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
		CHLOROFORM	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		CHLOROMETHANE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
		CIS-1,2-DICHLOROETHYLENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		CIS-1,3-DICHLOROPROPENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		CYCLOHEXANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2 J	1.9 U
		DIBROMOCHLOROMETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		DIBROMOMETHANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		DICHLORODIFLUOROMETHANE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
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Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4245					SP4277		SP4279		SP4287			
			Location	01006	SB07015		SB12009		SB17008		SB18027		FIELDQC	SB05016		SB05016
			Sample Date	/2022	8/4/2022		8/4/2022		8/4/2022		8/5/2022		8/6/2022	8/5/2022		8/5/2022
			Sample ID	LORNG_SB01006_8-10_08042022_K	LORNG_SB07015_0-1_08042022_K	LORNG_SB07015_8-10_08042022_K	LORNG_SB12009_0-1_08042022_K	LORNG_SB12009_8-10_08042022_K	LORNG_SB17008_0-1_08042022_K	LORNG_SB17008_8-10_08042022_K	LORNG_SB18027_0-1_08052022_K	LORNG_SB18027_8-10_08052022_K	LORNG_TB12_08062022	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	LORNG_SB05016_5-7_08052022_K
			QC Code	N	N	N	N	N	N	N	N	N	TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	ETHYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	0.85 J	1.9 U
		HEXACHLOROBUTADIENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		IODOMETHANE (METHYL IODIDE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		ISOPROPYLBENZENE (CUMENE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
		METHYL ACETATE	UG/KG	2.7 U	3.7 U	2.7 U	2.2 U	2 U					3 U	2.9 U	2.5 UJ	2.3 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG	11 U	16 U	11 J	9.3 U	8.2 U					12 U	12 U	7.8 J	9.5 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG	11 U	16 U	11 U	9.3 U	8.2 U					12 U	12 U	11 UJ	9.5 U
		METHYLCYCLOHEXANE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		METHYLENE CHLORIDE	UG/KG	11 U	16 U	11 U	9.3 U	8.2 U					12 U	12 U	11 UJ	9.5 U
		NAPHTHALENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	0.92 J	1.9 U
		N-BUTYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		N-PROPYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	1.4 J	1.9 U
		SEC-BUTYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		STYRENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		T-BUTYLBENZENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TERT-BUTYL METHYL ETHER	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TETRACHLOROETHYLENE(PCE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TOLUENE	UG/KG	2.3 U	3.1 U	3 J	1.9 U	1.6 U					2.5 U	2.4 U	1.4 J	1.9 U
		TRANS-1,2-DICHLOROETHENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TRANS-1,3-DICHLOROPROPENE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TRICHLOROETHYLENE (TCE)	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		TRICHLOROFLUOROMETHANE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
		VINYL ACETATE	UG/KG	2.3 U	3.1 U	2.2 U	1.9 U	1.6 U					2.5 U	2.4 U	2.1 UJ	1.9 U
		VINYL CHLORIDE	UG/KG	4.5 U	6.2 U	4.5 U	3.7 U	3.3 U					5 U	4.8 U	4.2 UJ	3.8 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG	52 U	53 U	55 U										
		2-METHYLNAPHTHALENE	UG/KG	10 U	29	11 U	11 U	11 U						4.1 J	3.5 J	11 U
		ACENAPHTHENE	UG/KG	10 U	130	11 U	11 U	11 U						11 U	12 U	11 U
		ACENAPHTHYLENE	UG/KG	10 U	26	11 U	11 U	11 U						11 U	12 U	11 U
		ANTHRACENE	UG/KG	10 U	250	11 U	18 J	11 U						6.4 J	7.1 J	11 U
		BENZO(A)ANTHRACENE	UG/KG	10 U	1,000	11 U	150	11 U						26	39	4.3 J
		BENZO(A)PYRENE	UG/KG	10 U	1,100	11 U	120	11 U						34	51	6.2 J
		BENZO(B)FLUORANTHENE	UG/KG	10 U	1,500	11 U	220	11 U						52	69	7.9 J
		BENZO(G,H,I)PERYLENE	UG/KG	10 U	740	11 U	85	11 U						30	39	5 J
		BENZO(K)FLUORANTHENE	UG/KG	10 UJ	460 J	11 UJ	61 J	11 UJ						18 J	27	4.7 J
		CHRYSENE	UG/KG	10 U	1,200	11 U	150	11 U						35	46	5 J
		DIBENZ(A,H)ANTHRACENE	UG/KG	10 U	140	11 U	11 U	11 U						11 U	12 U	11 U
		FLUORANTHENE	UG/KG	10 U	2,800	11 U	260	11 U						54	74	6 J
		FLUORENE	UG/KG	10 U	150	11 U	6.7 J	11 U						11 U	12 U	11 U
		INDENO(1,2,3-C,D)PYRENE	UG/KG	10 U	240	11 U	220	11 U						29	39	5.2 J
		NAPHTHALENE	UG/KG	10 U	61	11 U	11 U	11 U						11 U	12 U	11 U
		PENTACHLOROPHENOL	UG/KG	52 U	53 U	55 U	53 U	54 U						53 U	58 U	55 U
		PHENANTHRENE	UG/KG	10 U	1,800	11 U	130	11 U						30	34	3.4 J

Prepared by: AKN
Date: 12/9/22
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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP4245					SP4277		SP4279		SP4287			
		Location		01006	SB07015		SB12009		SB17008		SB18027		FIELDQC	SB05016		SB05016
		Sample Date		/2022	8/4/2022		8/4/2022		8/4/2022		8/5/2022		8/6/2022	8/5/2022		8/5/2022
		Sample ID		LORNG_SB01006_8-10_08042022_K	LORNG_SB07015_0-1_08042022_K	LORNG_SB07015_8-10_08042022_K	LORNG_SB12009_0-1_08042022_K	LORNG_SB12009_8-10_08042022_K	LORNG_SB17008_0-1_08042022_K	LORNG_SB17008_8-10_08042022_K	LORNG_SB18027_0-1_08052022_K	LORNG_SB18027_8-10_08052022_K	LORNG_TB12_08062022	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	LORNG_SB05016_5-7_08052022_K
		QC Code		N	N	N	N	N	N	N	N	N	TB	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		PYRENE	UG/KG	10 UJ	2,000 J	11 UJ	260 J	11 UJ						42	63	5.6 J
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		1,2-DICHLOROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		1,2-DIPHENYLHYDRAZINE	UG/KG	520 UJ	530 U	550 U	520 U	540 U						530 U	570 U	550 U
		1,3-DICHLOROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		1,4-DICHLOROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		1-METHYLNAPHTHALENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,3,4,6-TETRACHLOROPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,4,5-TRICHLOROPHENOL	UG/KG	640 U	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		2,4,6-TRICHLOROPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,4-DICHLOROPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,4-DIMETHYLPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,4-DINITROPHENOL	UG/KG	640 U	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		2,4-DINITROTOLUENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2,6-DINITROTOLUENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2-CHLORONAPHTHALENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2-CHLOROPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2-METHYLPHENOL (O-CRESOL)	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		2-NITROANILINE	UG/KG	640 UJ	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		2-NITROPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		3,3'-DICHLOROBENZIDINE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		3-NITROANILINE	UG/KG	640 UJ	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		4,6-DINITRO-2-METHYLPHENOL	UG/KG	640 U	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		4-BROMOPHENYL PHENYL ETHER	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		4-CHLORO-3-METHYLPHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		4-CHLOROANILINE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		4-CHLOROPHENYL PHENYL ETHER	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		4-NITROANILINE	UG/KG	640 UJ	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		4-NITROPHENOL	UG/KG	640 U	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		BENZALDEHYDE	UG/KG	260 UJ	260 J	2,200 J	450 J	270 U						320 J	360 J	270 U
		BENZIDINE	UG/KG	1,200 UJ	1,200 U	1,200 U	1,200 U	1,200 U						1,200 U	1,300 U	1,200 U
		BENZOIC ACID	UG/KG	640 U	660 U	680 U	650 U	670 U						650 U	710 U	680 U
		BENZYL ALCOHOL	UG/KG	520 U	530 U	550 U	83 J	540 U						530 U	570 U	550 U
		BENZYL BUTYL PHTHALATE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		BIPHENYL (DIPHENYL)	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		BIS(2-CHLOROETHOXY) METHANE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG	260 UJ	140 J	270 U	260 U	170 J						150 J	140 J	270 U
		CARBAZOLE	UG/KG	260 UJ	160 J	270 U	260 U	270 U						260 U	290 U	270 U
		CRESOLS, M & P	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		DIBENZOFURAN	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		DIETHYL PHTHALATE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		DIMETHYL PHTHALATE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4245					SP4277		SP4279		SP4287			
			Location	01006	SB07015		SB12009		SB17008		SB18027		FIELDQC	SB05016		SB05016
			Sample Date	/2022	8/4/2022		8/4/2022		8/4/2022		8/5/2022		8/6/2022	8/5/2022		8/5/2022
			Sample ID	LORNG_SB01006_8-10_08042022_K	LORNG_SB07015_0-1_08042022_K	LORNG_SB07015_8-10_08042022_K	LORNG_SB12009_0-1_08042022_K	LORNG_SB12009_8-10_08042022_K	LORNG_SB17008_0-1_08042022_K	LORNG_SB17008_8-10_08042022_K	LORNG_SB18027_0-1_08052022_K	LORNG_SB18027_8-10_08052022_K	LORNG_TB12_08062022	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	LORNG_SB05016_5-7_08052022_K
			QC Code	N	N	N	N	N	N	N	N	N	TB	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		DI-N-BUTYL PHTHALATE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		DI-N-OCTYLPHTHALATE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
SVOCs	T	HEXACHLOROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		HEXACHLOROBUTADIENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		HEXACHLOROCYCLOPENTADIENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		HEXACHLOROETHANE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		ISOPHORONE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		NITROBENZENE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		N-NITROSODIMETHYLAMINE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		N-NITROSODI-N-PROPYLAMINE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		N-NITROSODIPHENYLAMINE	UG/KG	260 UJ	260 U	270 U	260 U	270 U						260 U	290 U	270 U
		PHENOL	UG/KG	260 U	260 U	270 U	260 U	270 U						260 U	290 U	270 U
PCBs	T	PCB, TOTAL	UG/KG	77 U	140 J	86 UJ								90 UJ	88 U	84 U
		PCB-1016 (AROCLOR 1016)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1221 (AROCLOR 1221)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1232 (AROCLOR 1232)	UG/KG	9.8 U	11 U	11 UJ								12 UJ	11 U	11 U
		PCB-1242 (AROCLOR 1242)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1248 (AROCLOR 1248)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1254 (AROCLOR 1254)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1260 (AROCLOR 1260)	UG/KG	8.4 U	140 J	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1262 (AROCLOR 1262)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
		PCB-1268 (AROCLOR 1268)	UG/KG	8.4 U	9.4 U	9.4 UJ								9.8 UJ	9.6 U	9.2 U
Pesticides	T	ALDRIN	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		ALPHA ENDOSULFAN	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		BETA ENDOSULFAN	UG/KG	1.6 U	1.6 J	1.8 U								1.9 U	1.8 U	1.8 U
		CIS-CHLORDANE	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		DIELDRIN	UG/KG	1.6 U	1.8 U	1.8 U								1.9 U	1.8 U	1.8 U
		ENDOSULFAN SULFATE	UG/KG	1.6 U	1.8 U	1.8 U								1.9 U	1.8 U	1.8 U
		ENDRIN	UG/KG	1.6 U	1.8 U	1.8 U								1.9 U	1.8 U	1.8 U
		ENDRIN ALDEHYDE	UG/KG	1.6 U	2 J	1.8 U								1.9 U	1.8 U	1.8 U
		ENDRIN KETONE	UG/KG	1.6 U	12 J	1.8 U								3.4 J	1.8 U	1.8 U
		GAMMA BHC (LINDANE)	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		GAMMA-CHLORDANE	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		HEPTACHLOR	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		HEPTACHLOR EPOXIDE	UG/KG	0.84 U	0.94 U	0.95 U								0.98 U	0.96 U	0.92 U
		METHOXYCHLOR	UG/KG	8.4 U	9.4 U	9.5 U								9.8 U	9.6 U	9.2 U
		P,P'-DDD	UG/KG	1.6 U	8.3 J	2.9 J								110 J	310 J	18
		P,P'-DDE	UG/KG	1.6 U	24	1.8 U								9.7 J	19 J	1.6 J
		P,P'-DDT	UG/KG	1.6 U	39	1.8 U								20 J	43 J	2.6 J
		TOXAPHENE	UG/KG	16 U	18 U	18 U								19 U	18 U	18 U

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4245					SP4277		SP4279		SP4287			
			Location	01006	SB07015		SB12009		SB17008		SB18027		FIELDQC	SB05016		SB05016
			Sample Date	/2022	8/4/2022		8/4/2022		8/4/2022		8/5/2022		8/6/2022	8/5/2022		8/5/2022
			Sample ID	LORNG_SB01006_8-10_08042022_K	LORNG_SB07015_0-1_08042022_K	LORNG_SB07015_8-10_08042022_K	LORNG_SB12009_0-1_08042022_K	LORNG_SB12009_8-10_08042022_K	LORNG_SB17008_0-1_08042022_K	LORNG_SB17008_8-10_08042022_K	LORNG_SB18027_0-1_08052022_K	LORNG_SB18027_8-10_08052022_K	LORNG_TB12_08062022	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	LORNG_SB05016_5-7_08052022_K
			QC Code	N	N	N	N	N	N	N	N	N	TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	T	ALUMINUM	MG/KG	18,900	17,400	15,800	18,000	20,200						15,700	16,100	15,200
		ANTIMONY	MG/KG	0.17 J	0.29 J	0.37 J	0.99 U	0.24 J						0.98 U	0.24 J	0.22 J
		ARSENIC	MG/KG	7.51	9.5	6.66	8.05	7.91						6.56	6.57	6.27
		BARIUM	MG/KG	70.4	67	28.6	59.2	69.7						49.1	44.8	44.9
		BERYLLIUM	MG/KG	0.552	0.495	0.406 J	0.538	0.668						0.425 J	0.413 J	0.421 J
		CADMIUM	MG/KG	0.57 U	0.347 J	0.02 J	0.055 J	0.56 U						0.057 J	0.51 U	0.54 U
		CALCIUM	MG/KG	1,900	19,700	1,320	8,170	8,200						8,910	9,080	6,030
		CHROMIUM, TOTAL	MG/KG	38	33.5	28.7	37.6	37.1						38.3	42.7	35.6
		COBALT	MG/KG	13.4	13.6	14	12.8	14.3						10.3	11	11.4
		COPPER	MG/KG	21.5	34.3	11.3	24.3	23.8						17.6	18.4	19
		IRON	MG/KG	32,700	30,400	34,700	31,400	33,500						27,300	28,400	28,200
		LEAD	MG/KG	12.6	46.2	14.5	20.7	13.7						75.6	71.6	18.8
		MAGNESIUM	MG/KG	8,530	7,190	6,210	8,260	8,880						7,020	7,180	7,400
		MANGANESE	MG/KG	558	1200	498	592	587						622	673	576
		MERCURY	MG/KG	0.042	0.062	0.041	0.051	0.037						0.042	0.048	0.062
		NICKEL	MG/KG	46.1	31	32.8	44.4	45.2						33.6	34.8	38.8
		POTASSIUM	MG/KG	1,740	1,160	896	1,450	2,260						1,410	1,360	1,210
		SELENIUM	MG/KG	0.84 J	0.8 J	1.4 J	0.66 J	0.68 J						0.79 J	0.75 J	0.37 J
		SILVER	MG/KG	1.01 J	1.01 J	1.2 J	1.02 J	1.07 J						0.999 J	0.922 J	0.886 J
		SODIUM	MG/KG	49.4 U	64.6 U	42 U	54.7 U	73.5 U						166	148	108
		THALLIUM	MG/KG	0.38 J	0.88 J	0.65 J	0.49 J	0.45 J						0.29 J	0.51 J	0.28 J
		VANADIUM	MG/KG	25.4	33.4	31.1	25.1	29.6						29.7	29	22.6
		ZINC	MG/KG	62.4	73.2	58.6	65.4	66.6						79	77.5	59.4
WetChem	T	SOLIDS, PERCENT	PERCENT	90	86	85	91	91	90	94	86	90		85	85	87
		TOTAL ORGANIC CARBON	UG/G	630	22,000	20,000	12,000	1,000	19,000	5,800	9,600	1,100		14,000	16,000	2,500
Perchlorate	T	PERCHLORATE	UG/KG													

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
T = total
TB = trip blank

Prepared by: AKN
Date: 12/9/22
Checked by: ALJ
Date: 12/14/22

Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4287						SP4356								SP4357			
			Location	SB22004						SB20009						SB24003		FIELDQC		SB24003	
			Sample Date	8/5/2022						8/8/2022						8/8/2022		8/9/2022		8/8/2022	
			Sample ID	LORNG_SB22004_0-1_08052022_K		LORNG_SB22004_8-10_08052022_K		LORNG_SB22004_8-10_08052022FDK		LORNG_SB20009_0-1_08082022_K		LORNG_SB20009_0-1_08082022FD_K		LORNG_SB20009_8-10_08082022_K		LORNG_SB20009_8-10_08082022FDK		LORNG_SB24003_0-1_08082022_K		LORNG_TB13_08092022		LORNG_SB24003_8-10_08082022_K		LORNG_SB24003_8-10_08082022FDK	
			QC Code	N		N		FD		N		FD		N		FD		N		TB		N		FD	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		1,1,1,2-TETRACHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1,1-TRICHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1,2,2-TETRACHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1,2-TRICHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1-DICHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1-DICHLOROETHENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,1-DICHLOROPROPENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2,3-TRICHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2,3-TRICHLOROPROPANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2,4-TRICHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2,4-TRIMETHYLBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2-DICHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2-DICHLOROETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,2-DICHLOROPROPANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,3-DICHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,3-DICHLOROPROPANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		1,4-DICHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
VOCs	T	2,2-DICHLOROPROPANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		2-CHLOROTOLUENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		2-HEXANONE	UG/KG															17	U	12	U	9.6	U	10	U
		4-CHLOROTOLUENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		ACETONE	UG/KG															17	U	12	U	9.6	U	10	U
		BENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		BROMOBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		BROMOCHLOROMETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		BROMODICHLOROMETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		BROMOFORM	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		BROMOMETHANE	UG/KG															6.9	U	5	U	3.8	U	4.2	U
		CARBON DISULFIDE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CARBON TETRACHLORIDE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CHLOROBENZENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CHLOROETHANE	UG/KG															6.9	U	5	U	3.8	U	4.2	U
		CHLOROFORM	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CHLOROMETHANE	UG/KG															6.9	U	5	U	3.8	U	4.2	U
		CIS-1,2-DICHLOROETHYLENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CIS-1,3-DICHLOROPROPENE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		CYCLOHEXANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		DIBROMOCHLOROMETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		DIBROMOMETHANE	UG/KG															3.5	U	2.5	U	1.9	U	2.1	U
		DICHLORODIFLUOROMETHANE	UG/KG															6.9	U	5	U	3.8	U	4.2	U

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Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4287		SP4287		SP4287		SP4356		SP4356		SP4356		SP4356		SP4357		SP4357		SP4357	
			Location	SB22004		SB22004		SB22004		SB20009		SB20009		SB20009		SB20009		SB24003		FIELDQC		SB24003	
			Sample Date	8/5/2022		8/5/2022		8/5/2022		8/8/2022		8/8/2022		8/8/2022		8/8/2022		8/8/2022		8/9/2022		8/8/2022	
			Sample ID	LORNG_SB22004_0-1_08052022_K		LORNG_SB22004_8-10_08052022_K		LORNG_SB22004_8-10_08052022FDK		LORNG_SB20009_0-1_08082022_K		LORNG_SB20009_0-1_08082022FD_K		LORNG_SB20009_8-10_08082022_K		LORNG_SB20009_8-10_08082022FDK		LORNG_SB24003_0-1_08082022_K		LORNG_TB13_08092022		LORNG_SB24003_8-10_08082022_K		LORNG_SB24003_8-10_08082022FDK	
			QC Code	N		N		FD		N		FD		N		FD		N		TB		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	ETHYLBENZENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		HEXACHLOROBUTADIENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		IODOMETHANE (METHYL IODIDE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		ISOPROPYLBENZENE (CUMENE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG															6.9 U		5 U		3.8 U		4.2 U	
		METHYL ACETATE	UG/KG															4.2 U		3 U		2.3 U		2.5 U	
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG															17 U		12 U		9.6 U		10 U	
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG															17 U		12 U		9.6 U		10 U	
		METHYLCYCLOHEXANE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		METHYLENE CHLORIDE	UG/KG															17 U		12 U		9.6 U		10 U	
		NAPHTHALENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		N-BUTYLBENZENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		N-PROPYLBENZENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		SEC-BUTYLBENZENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		STYRENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		T-BUTYLBENZENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TERT-BUTYL METHYL ETHER	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TETRACHLOROETHYLENE(PCE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TOLUENE	UG/KG															3.5 U		3.6 J		1.9 U		2.1 U	
		TRANS-1,2-DICHLOROETHENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TRANS-1,3-DICHLOROPROPENE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TRICHLOROETHYLENE (TCE)	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		TRICHLOROFLUOROMETHANE	UG/KG															6.9 U		5 U		3.8 U		4.2 U	
		VINYL ACETATE	UG/KG															3.5 U		2.5 U		1.9 U		2.1 U	
		VINYL CHLORIDE	UG/KG															6.9 U		5 U		3.8 U		4.2 U	
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG																						
		2-METHYLNAPHTHALENE	UG/KG															10 U				9.8 U		10 U	
		ACENAPHTHENE	UG/KG															10 U				9.8 U		10 U	
		ACENAPHTHYLENE	UG/KG															10 U				9.8 U		10 U	
		ANTHRACENE	UG/KG															10 U				9.8 U		10 U	
		BENZO(A)ANTHRACENE	UG/KG															10 U				9.8 U		10 U	
		BENZO(A)PYRENE	UG/KG															10 U				9.8 U		10 U	
		BENZO(B)FLUORANTHENE	UG/KG															3.9 J				9.8 U		10 U	
		BENZO(G,H,I)PERYLENE	UG/KG															10 U				9.8 U		10 U	
		BENZO(K)FLUORANTHENE	UG/KG															10 U				9.8 U		10 U	
		CHRYSENE	UG/KG															2.1 J				9.8 U		10 U	
		DIBENZ(A,H)ANTHRACENE	UG/KG															10 U				9.8 U		10 U	
		FLUORANTHENE	UG/KG															2.4 J				9.8 U		10 U	
		FLUORENE	UG/KG															10 U				9.8 U		10 U	
		INDENO(1,2,3-C,D)PYRENE	UG/KG															10 U				9.8 U		10 U	
		NAPHTHALENE	UG/KG															10 U				9.8 U		10 U	
		PENTACHLOROPHENOL	UG/KG															52 U				49 U		51 U	
		PHENANTHRENE	UG/KG															10 U				9.8 U		10 U	

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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4287		SP4287		SP4287		SP4356		SP4356		SP4356		SP4356		SP4357		SP4357		SP4357	
			Location	SB22004		SB22004		SB22004		SB20009		SB20009		SB20009		SB20009		SB24003		FIELDQC		SB24003	
			Sample Date	8/5/2022		8/5/2022		8/5/2022		8/8/2022		8/8/2022		8/8/2022		8/8/2022		8/8/2022		8/9/2022		8/8/2022	
			Sample ID	LORNG_SB22004_0-1_08052022_K		LORNG_SB22004_8-10_08052022_K		LORNG_SB22004_8-10_08052022FDK		LORNG_SB20009_0-1_08082022_K		LORNG_SB20009_0-1_08082022FD_K		LORNG_SB20009_8-10_08082022_K		LORNG_SB20009_8-10_08082022FDK		LORNG_SB24003_0-1_08082022_K		LORNG_TB13_08092022		LORNG_SB24003_8-10_08082022_K		LORNG_SB24003_8-10_08082022FDK	
			QC Code	N		N		FD		N		FD		N		FD		N		TB		N		FD	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		PYRENE	UG/KG															10	U			9.8	U	10	U
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG															260	U			240	U	250	UJ
		1,2-DICHLOROBENZENE	UG/KG															260	U			240	U	250	UJ
		1,2-DIPHENYLHYDRAZINE	UG/KG															520	U			490	U	500	UJ
		1,3-DICHLOROBENZENE	UG/KG															260	U			240	U	250	UJ
		1,4-DICHLOROBENZENE	UG/KG															260	U			240	U	250	UJ
		1-METHYLNAPHTHALENE	UG/KG															260	U			240	U	250	UJ
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG															260	U			240	U	250	UJ
		2,3,4,6-TETRACHLOROPHENOL	UG/KG															260	U			240	U	250	U
		2,4,5-TRICHLOROPHENOL	UG/KG															640	U			600	U	630	U
		2,4,6-TRICHLOROPHENOL	UG/KG															260	U			240	U	250	U
		2,4-DICHLOROPHENOL	UG/KG															260	U			240	U	250	U
		2,4-DIMETHYLPHENOL	UG/KG															260	U			240	U	250	U
		2,4-DINITROPHENOL	UG/KG															640	U			600	U	630	U
		2,4-DINITROTOLUENE	UG/KG															260	U			240	U	250	UJ
		2,6-DINITROTOLUENE	UG/KG															260	U			240	U	250	UJ
		2-CHLORONAPHTHALENE	UG/KG															260	U			240	U	250	UJ
		2-CHLOROPHENOL	UG/KG															260	U			240	U	250	U
		2-METHYLPHENOL (O-CRESOL)	UG/KG															260	U			240	U	250	U
		2-NITROANILINE	UG/KG															640	U			600	U	630	UJ
		2-NITROPHENOL	UG/KG															260	U			240	U	250	U
		3,3'-DICHLOROBENZIDINE	UG/KG															260	U			240	U	250	UJ
		3-NITROANILINE	UG/KG															640	U			600	U	630	UJ
		4,6-DINITRO-2-METHYLPHENOL	UG/KG															640	U			600	U	630	U
		4-BROMOPHENYL PHENYL ETHER	UG/KG															260	U			240	U	250	UJ
		4-CHLORO-3-METHYLPHENOL	UG/KG															260	U			240	U	250	U
		4-CHLOROANILINE	UG/KG															260	U			240	U	250	UJ
		4-CHLOROPHENYL PHENYL ETHER	UG/KG															260	U			240	U	250	UJ
		4-NITROANILINE	UG/KG															640	U			600	U	630	UJ
		4-NITROPHENOL	UG/KG															640	U			600	U	630	U
		BENZALDEHYDE	UG/KG															220	J			240	U	250	UJ
		BENZIDINE	UG/KG															1,200	U			1,100	U	1,100	UJ
		BENZOIC ACID	UG/KG															640	U			600	U	630	U
		BENZYL ALCOHOL	UG/KG															140	J			490	U	71	J
		BENZYL BUTYL PHTHALATE	UG/KG															260	U			240	U	250	UJ
		BIPHENYL (DIPHENYL)	UG/KG															260	U			240	U	250	UJ
		BIS(2-CHLOROETHOXY) METHANE	UG/KG															260	U			240	U	250	UJ
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG															260	U			240	U	250	UJ
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG															260	U			240	U	250	UJ
		CARBAZOLE	UG/KG															260	U			240	U	250	UJ
		CRESOLS, M & P	UG/KG															260	U			240	U	250	U
		DIBENZOFURAN	UG/KG															260	U			240	U	250	UJ
		DIETHYL PHTHALATE	UG/KG															260	U			240	U	250	UJ
		DIMETHYL PHTHALATE	UG/KG															260	U			240	U	250	UJ

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Table 2b - Summary of non-PFAS Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP4287						SP4356								SP4357			
		Location	SB22004						SB20009						SB24003		FIELDQC		SB24003	
		Sample Date	8/5/2022						8/8/2022						8/8/2022		8/9/2022		8/8/2022	
		Sample ID	LORNG_SB22004_0-1_08052022_K		LORNG_SB22004_8-10_08052022_K		LORNG_SB22004_8-10_08052022FDK		LORNG_SB20009_0-1_08082022_K		LORNG_SB20009_0-1_08082022FD_K		LORNG_SB20009_8-10_08082022_K		LORNG_SB20009_8-10_08082022FDK		LORNG_SB24003_0-1_08082022_K		LORNG_TB13_08092022		LORNG_SB24003_8-10_08082022_K		LORNG_SB24003_8-10_08082022FDK	
		QC Code	N		N		FD		N		FD		N		FD		N		TB		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		DI-N-BUTYL PHTHALATE	UG/KG													260	U			240	U	250	UJ
		DI-N-OCTYLPHTHALATE	UG/KG													260	U			240	U	250	UJ
SVOCs	T	HEXACHLOROBENZENE	UG/KG													260	U			240	U	250	UJ
		HEXACHLOROBUTADIENE	UG/KG													260	U			240	U	250	UJ
		HEXACHLOROCYCLOPENTADIENE	UG/KG													260	U			240	U	250	UJ
		HEXACHLOROETHANE	UG/KG													260	U			240	U	250	UJ
		ISOPHORONE	UG/KG													260	U			240	U	250	UJ
		NITROBENZENE	UG/KG													260	U			240	U	250	UJ
		N-NITROSODIMETHYLAMINE	UG/KG													260	U			240	U	250	UJ
		N-NITROSODI-N-PROPYLAMINE	UG/KG													260	U			240	U	250	UJ
		N-NITROSODIPHENYLAMINE	UG/KG													260	U			240	U	250	UJ
		PHENOL	UG/KG													260	U			240	U	250	U
PCBs	T	PCB, TOTAL	UG/KG													82	U			78	U	82	U
		PCB-1016 (AROCLOR 1016)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1221 (AROCLOR 1221)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1232 (AROCLOR 1232)	UG/KG													10	U			9.9	U	10	U
		PCB-1242 (AROCLOR 1242)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1248 (AROCLOR 1248)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1254 (AROCLOR 1254)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1260 (AROCLOR 1260)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1262 (AROCLOR 1262)	UG/KG													8.9	U			8.4	U	8.9	U
		PCB-1268 (AROCLOR 1268)	UG/KG													8.9	U			8.4	U	8.9	U
Pesticides	T	ALDRIN	UG/KG													0.89	U			0.84	U	0.89	U
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG													0.89	U			0.84	U	0.89	U
		ALPHA ENDOSULFAN	UG/KG													0.89	U			0.84	U	0.89	U
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG													0.89	U			0.84	U	0.89	U
		BETA ENDOSULFAN	UG/KG													1.7	U			1.6	U	1.7	U
		CIS-CHLORDANE	UG/KG													0.89	U			0.84	U	0.89	U
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG													0.89	U			0.84	U	0.89	U
		DIELDRIN	UG/KG													1.7	U			1.6	U	1.7	U
		ENDOSULFAN SULFATE	UG/KG													1.7	U			1.6	U	1.7	U
		ENDRIN	UG/KG													1.7	U			1.6	U	1.7	U
		ENDRIN ALDEHYDE	UG/KG													1.7	U			1.6	U	1.7	U
		ENDRIN KETONE	UG/KG													1.7	U			1.6	U	1.7	U
		GAMMA BHC (LINDANE)	UG/KG													0.89	U			0.84	U	0.89	U
		GAMMA-CHLORDANE	UG/KG													0.89	U			0.84	U	0.89	U
		HEPTACHLOR	UG/KG													0.89	U			0.84	U	0.89	U
		HEPTACHLOR EPOXIDE	UG/KG													0.89	U			0.84	U	0.89	U
		METHOXYCHLOR	UG/KG													8.9	U			8.4	U	8.9	U
		P,P'-DDD	UG/KG													1.7	U			1.6	U	1.7	U
		P,P'-DDE	UG/KG													1.7	U			1.6	U	1.7	U
		P,P'-DDT	UG/KG													1.7	U			1.6	U	1.7	U
		TOXAPHENE	UG/KG													17	U			16	U	17	U

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Data Validation and Usability Report
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August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4287						SP4356								SP4357			
			Location	SB22004						SB20009						SB24003		FIELDQC		SB24003	
			Sample Date	8/5/2022						8/8/2022						8/8/2022		8/9/2022		8/8/2022	
			Sample ID	LORNG_SB22004_0-1_08052022_K		LORNG_SB22004_8-10_08052022_K		LORNG_SB22004_8-10_08052022FDK		LORNG_SB20009_0-1_08082022_K		LORNG_SB20009_0-1_08082022FD_K		LORNG_SB20009_8-10_08082022_K		LORNG_SB20009_8-10_08082022FDK		LORNG_SB24003_0-1_08082022_K		LORNG_TB13_08092022		LORNG_SB24003_8-10_08082022_K		LORNG_SB24003_8-10_08082022FDK	
			QC Code	N		N		FD		N		FD		N		FD		N		TB		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	T	ALUMINUM	MG/KG															16,900				17,000		17,000	
		ANTIMONY	MG/KG															0.78	U			0.3	J	0.27	J
		ARSENIC	MG/KG															8.84				9.38		6.93	
		BARIUM	MG/KG															52.9				49.7		37.7	
		BERYLLIUM	MG/KG															0.6				0.484		0.426	
		CADMIUM	MG/KG															1.2	U			0.4	U	0.073	J
		CALCIUM	MG/KG															2,480				7,890		6,720	
		CHROMIUM, TOTAL	MG/KG															37.3				36.3		38.3	
		COBALT	MG/KG															13				13.1		12.6	
		COPPER	MG/KG															23.7				21.9		17.8	
		IRON	MG/KG															33,800				30,100		30,600	
		LEAD	MG/KG															16				12.4		12.7	
		MAGNESIUM	MG/KG															9,330				7,800		8,030	
		MANGANESE	MG/KG															656				489		446	
		MERCURY	MG/KG															0.04				0.032	J	0.049	
		NICKEL	MG/KG															49.8				44.8		43	
		POTASSIUM	MG/KG															1,280				1,590		1,240	
		SELENIUM	MG/KG															1.1	U			0.44	J	0.3	J
		SILVER	MG/KG															0.62	U			0.489	J	0.605	J
		SODIUM	MG/KG															50	U			57.3	U	49.5	U
		THALLIUM	MG/KG															0.46	J			0.35	J	0.28	J
		VANADIUM	MG/KG															23.9				23		21.8	
		ZINC	MG/KG															62.7				58.6		59.2	
WetChem	T	SOLIDS, PERCENT	PERCENT	94		91		91		91		89		91		90		91				90		90	
		TOTAL ORGANIC CARBON	UG/G	28,000		2,400		2,500		14,000	J	8,100	J	1,000		1,000		8,700				690	J	620	
Perchlorate	T	PERCHLORATE	UG/KG																						

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
T = total
TB = trip blank

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Checked by: ALJ
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97849	M537	T	FA97849-3	LORNG_SB06006_0-1_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
			FA97849-4	LORNG_SB06006_7.5-8.5_80222	Perfluorooctanesulfonic acid (PFOS)	20.9	=	20.9	J	MSH, MSD	UG/KG
FA97888	M537	T	FA97888-13	LORNG_SB01006_0-1_08042022	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	2.5	=	2.5	J	RIS	UG/KG
			FA97888-14	LORNG_SB01006_8-10_08042022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.57	U	0.57	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.57	U	0.57	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	10	=	10	J	MSH	UG/KG
			FA97888-9	LORNG_SB13021_0-1_08032022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
FA97926	M537	T	FA97926-2	LORNG_SB05018_0-1_08042022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA97926-10	LORNG_SB17008_13-15_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
			FA97926-11	LORNG_SB17008_8-10_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
FA97959	M537	T	FA97959-3	LORNG_SB05016_0-1_08052022	6:2 Fluorotelomer sulfonate (6:2 FTS)	2.9	=	2.9	J	FDD	UG/KG
					8:2 Fluorotelomer sulfonate (8:2 FTS)	2.5	=	2.5	J	FDD	UG/KG
					Perfluorohexanesulfonic acid (PFHxS)	5	=	5	J	FDD	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	113	=	113	J	FDD	UG/KG
			FA97959-4	LORNG_SB05016_0-1_08052022FD	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.75	J	0.75	J	FDD	UG/KG
					8:2 Fluorotelomer sulfonate (8:2 FTS)	0.62	J	0.62	J	FDD	UG/KG

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FA97959	M537	T	FA97959-4	LORNG_SB05015_0-1_08052022FD	Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.5	J	FDD	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	22.9	=	22.9	J	FDD	UG/KG
			FA97959-6	LORNG_SB22004_0-1_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
			FA97959-7	LORNG_SB22004_13-15_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
			FA97959-9	LORNG_SB22004_8-10_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
			FA97959-10	LORNG_SB22004_8-10_08052022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
FA98012	M537	T	FA98012-2	LORNG_SB01015_0-1_08082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.55	U	0.55	UJ	RIS	UG/KG
			FA98012-3	LORNG_SB01015_0-1_08082022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.64	U	0.64	UJ	RIS	UG/KG
			FA98012-6	LORNG_SB01015_8-10_08082022	Perfluorooctanesulfonic acid (PFOS)	9.4	=	9.4	J	FDD	UG/KG
			FA98012-7	LORNG_SB01015_8-10_08082022FD	Perfluorooctanesulfonic acid (PFOS)	3.8	=	3.8	J	FDD	UG/KG
FA98221	M537	T	FA98221-11	LORNG_SB01022_0-1_08162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA98221-26	LORNG_SB20013_6-7_08162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
FA98256	M537	T	FA98256-10	LORNG_SB13025_0-1_08172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.2	U	5.2	R	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
			FA98256-20	LORNG_SB13026_0-1_08172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
FA98280	M537	T	FA98280-6	LORNG_SB05025_0-1_08172022	Perfluorooctanesulfonic acid (PFOS)	62.4	=	62.4	J	MSL	UG/KG
			FA98280-13	LORNG_SB12015_0-1_08182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.6	U	5.6	UJ	RIS	UG/KG
			FA98280-19	LORNG_SB12016_8-10_08182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.9	U	5.9	UJ	RIS	UG/KG

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			FA98280-21	LORNG_SB12017_0-1_08182022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
FA98345	M537	T	FA98345-30	LORNG_SB07018_8-10_08202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA98345-31	LORNG_SB07018_8-10_08202022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6	U	6	UJ	RIS	UG/KG
FA98980	M537	T	FA98980-12	LORNG_SB01017_0-1_09142022	Perfluorooctanesulfonic acid (PFOS)	26.7	=	26.7	J	MSH	UG/KG
			FA98980-26	LORNG_SB01021_0-1_09142022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	6.4	U	6.4	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	6.4	U	6.4	UJ	RIS	UG/KG
			FA98980-15	LORNG_SB01023_0-1_09142022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	5.9	U	5.9	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	5.9	U	5.9	UJ	RIS	UG/KG
			FA98980-27	LORNG_SB01027_0-1_09142022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA98980-19	LORNG_SB01028_0-1_09142022	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	6	U	6	UJ	RIS	UG/KG
			FA98980-29	LORNG_SB01029_1-2_09142022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	6.4	U	6.4	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	6.4	U	6.4	UJ	RIS	UG/KG

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FA98980	M537	T	FA98980-20	LORNG_SB05026_0-1_09132022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	11	U	11	UJ	RIS	UG/KG
			FA98980-5	LORNG_SB12013_0-1_09132022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	5.9	U	5.9	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	5.9	U	5.9	UJ	RIS	UG/KG
			FA98980-7	LORNG_SB19006_0-1_09132022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
SP4213	BNASIM D	T	SP4213-1	LORNG_SB06006_0-1_08022022_K	ANTHRACENE	14	J	14	J	ISL	UG/KG
					BENZO(A)ANTHRACENE	90		90	J	ISL	UG/KG
					BENZO(A)PYRENE	10	U	10	UJ	ISL	UG/KG
					BENZO(B)FLUORANTHENE	10	U	10	UJ	ISL	UG/KG
					BENZO(G,H,I)PERYLENE	10	U	10	UJ	ISL	UG/KG
					BENZO(K)FLUORANTHENE	10	U	10	UJ	ISL	UG/KG
					CHRYSENE	110		110	J	ISL	UG/KG
					DIBENZ(A,H)ANTHRACENE	10	U	10	UJ	ISL	UG/KG
					FLUORANTHENE	150		150	J	ISL	UG/KG
					FLUORENE	3.8	J	3.8	J	LCD	UG/KG
					INDENO(1,2,3-C,D)PYRENE	10	U	10	UJ	ISL	UG/KG
					PENTACHLOROPHENOL	51	U	51	UJ	SVLL, ISL	UG/KG
					PHENANTHRENE	76		76	J	ISL	UG/KG
					PYRENE	170		170	J	ISL	UG/KG
			SP4213-2	LORNG_SB06006_7.5-8.5_8022022K	PENTACHLOROPHENOL	72	U	72	UJ	SVLL	UG/KG
					BENZO(A)ANTHRACENE	10	U	10	UJ	ISL	UG/KG
					BENZO(A)PYRENE	10	U	10	UJ	ISL	UG/KG
					BENZO(B)FLUORANTHENE	10	U	10	UJ	ISL	UG/KG
					BENZO(G,H,I)PERYLENE	10	U	10	UJ	ISL	UG/KG

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SP4213	BNASIMD	T	SP4213-4	LORNG_SB10010_8-10_08022022_K	BENZO(K)FLUORANTHENE	10	U	10	UJ	ISL	UG/KG
					CHRYSENE	10	U	10	UJ	ISL	UG/KG
					DIBENZ(A,H)ANTHRACENE	10	U	10	UJ	ISL	UG/KG
					INDENO(1,2,3-C,D)PYRENE	10	U	10	UJ	ISL	UG/KG
					PENTACHLOROPHENOL	51	U	51	UJ	SVLL	UG/KG
					PYRENE	10	U	10	UJ	ISL	UG/KG
	SW6010C	T	SP4213-1	LORNG_SB06006_0-1_08022022_K	SODIUM	61.1	J	61.1	U	LBM	MG/KG
			SP4213-2	LORNG_SB06006_7.5-8.5_8022022K	SODIUM	48.2	J	48.2	U	LBM	MG/KG
			SP4213-3	LORNG_SB10010_0-1_08022022_K	ALUMINUM	17,400		17,400	J	PDSL	MG/KG
					ANTIMONY	0.16	JN*	0.16	J	MSL, MSD	MG/KG
					CALCIUM	15,600		15,600	J	MSD	MG/KG
					CHROMIUM, TOTAL	39.6		39.6	J	MSL	MG/KG
					LEAD	41		41	J	DS	MG/KG
					MAGNESIUM	8,480		8,480	J	PDSL	MG/KG
					NICKEL	41.4		41.4	J	MSL	MG/KG
					POTASSIUM	1,160		1,160	J	MSH, MSD	MG/KG
					SODIUM	47	J	47.2	U	LBM	MG/KG
					ZINC	63	E	63	J	DS	MG/KG
			SP4213-4	LORNG_SB10010_8-10_08022022_K	SODIUM	61.4	J	61.4	U	LBM	MG/KG
	SW8081B	T	SP4213-1	LORNG_SB06006_0-1_08022022_K	P,P'-DDD	1	JJ	1	J	CFD	UG/KG
					TOXAPHENE	17	U	17	UJ	CCL	UG/KG
			SP4213-2	LORNG_SB06006_7.5-8.5_8022022K	METHOXYCHLOR	12	U	12	UJ	CCL	UG/KG
			SP4213-1	LORNG_SB06006_0-1_08022022_K	PCB-1016 (AROCLOR 1016)	8.7	U	8.7	UJ	CCL	UG/KG
					PCB-1221 (AROCLOR 1221)	8.7	U	8.7	UJ	CCL	UG/KG
					PCB-1232 (AROCLOR 1232)	10	U	10	UJ	CCL	UG/KG
					PCB-1242 (AROCLOR 1242)	8.7	U	8.7	UJ	CCL	UG/KG

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SP4213	SW8082 A	T	SP4213-2	LORNG_SB06006_7.5-8.5_8022022K	PCB, TOTAL	110	U	110	UJ	SGL	UG/KG
					PCB-1016 (AROCLOR 1016)	12	U	12	UJ	CCL, SGL	UG/KG
					PCB-1221 (AROCLOR 1221)	12	U	12	UJ	CCL, SGL	UG/KG
					PCB-1232 (AROCLOR 1232)	14	U	14	UJ	CCL, SGL	UG/KG
					PCB-1242 (AROCLOR 1242)	12	U	12	UJ	CCL, SGL	UG/KG
					PCB-1248 (AROCLOR 1248)	12	U	12	UJ	SGL	UG/KG
					PCB-1254 (AROCLOR 1254)	12	U	12	UJ	SGL	UG/KG
					PCB-1260 (AROCLOR 1260)	12	U	12	UJ	SGL	UG/KG
					PCB-1262 (AROCLOR 1262)	12	U	12	UJ	SGL	UG/KG
					PCB-1268 (AROCLOR 1268)	12	U	12	UJ	SGL	UG/KG
	SW8270 D	T	SP4213-1	LORNG_SB06006_0-1_08022022_K	2,2'-OXYBIS(1-CHLORO)PROPANE	250	U	250	UJ	SVLL	UG/KG
					2,4-DINITROPHENOL	620	U	620	UJ	CCL	UG/KG
					3,3'-DICHLOROBENZIDINE	250	U	250	UJ	SVLL	UG/KG
					4-NITROPHENOL	620	U	620	UJ	ICD	UG/KG
					BENZALDEHYDE	190	JLL	190	J	CCL, LCH, LCD	UG/KG
					BENZIDINE	1,100	U	1,100	R	SVLL	UG/KG
					BENZOIC ACID	620	U	620	UJ	SVLL, CCL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	120	J	120	J	LCD	UG/KG
					HEXACHLOROCYCLOPENTADIENE	250	U	250	UJ	SVLL, CCL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	360	U	360	UJ	SVLL	UG/KG
					2,4-DINITROPHENOL	880	U	880	UJ	CCL	UG/KG
					3,3'-DICHLOROBENZIDINE	360	U	360	UJ	SVLL	UG/KG
					4-NITROPHENOL	880	U	880	UJ	ICD	UG/KG

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SP4213	SW8270 D	T	SP4213-2	LORNG_SB06006_7.5-8.5_8022022K	BENZALDEHYDE	360	U	360	UJ	CCL	UG/KG
					BENZIDINE	1,600	U	1,600	R	SVLL	UG/KG
					BENZOIC ACID	880	U	880	UJ	SVLL, CCL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	360	U	360	UJ	SVLL, CCL	UG/KG
			SP4213-3	LORNG_SB10010_0-1_08022022_K	2,2'-OXYBIS(1-CHLORO)PROPANE	270	U	270	UJ	SVLL	UG/KG
					2,4-DINITROPHENOL	660	U	660	UJ	CCL	UG/KG
					3,3'-DICHLOROBENZIDINE	270	U	270	UJ	SVLL	UG/KG
					4-NITROPHENOL	660	U	660	UJ	ICD	UG/KG
					BENZALDEHYDE	210	JLL	210	J	CCL	UG/KG
					BENZIDINE	1,200	U	1,200	R	SVLL	UG/KG
					BENZOIC ACID	660	U	660	UJ	SVLL, CCL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	270	U	270	UJ	SVLL, CCL	UG/KG
			SP4213-4	LORNG_SB10010_8-10_08022022_K	1,2,4-TRICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DIPHENYLHYDRAZINE	500	U	500	UJ	SGL	UG/KG
					1,3-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1-METHYLNAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	250	U	250	UJ	SVLL, SGL	UG/KG
					2,4-DINITROPHENOL	620	U	620	UJ	CCL	UG/KG
					2,4-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2,6-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2-CHLORONAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2-NITROANILINE	620	U	620	UJ	SGL	UG/KG

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Checked by: ALJ
Date: 12/14/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4213	SW8270 D	T	SP4213-4	LORNG_SB10010_8-10_08022022_K	3,3'-DICHLOROBENZIDINE	250	U	250	UJ	SVLL, SGL	UG/KG
					3-NITROANILINE	620	U	620	UJ	SGL	UG/KG
					4-BROMOPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-CHLOROANILINE	250	U	250	UJ	SGL	UG/KG
					4-CHLOROPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-NITROANILINE	620	U	620	UJ	SGL	UG/KG
					4-NITROPHENOL	620	U	620	UJ	ICD	UG/KG
					BENZALDEHYDE	250	U	250	UJ	CCL, SGL	UG/KG
					BENZIDINE	1,100	U	1,100	R	SVLL, SGL	UG/KG
					BENZOIC ACID	620	U	620	UJ	SVLL, CCL	UG/KG
					BENZYL BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					BIPHENYL (DIPHENYL)	250	U	250	UJ	SGL	UG/KG
					BIS(2-CHLOROETHOXY) METHANE	250	U	250	UJ	SGL	UG/KG
					BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	250	U	250	UJ	SGL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	250	U	250	UJ	SGL	UG/KG
					CARBAZOLE	250	U	250	UJ	SGL	UG/KG
					DIBENZOFURAN	250	U	250	UJ	SGL	UG/KG
					DIETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DIMETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-OCTYLPHTHALATE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	250	U	250	UJ	SGL	UG/KG

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SP4213	SW8270 D	T	SP4213-4	LORNG_SB10010_8-10_08022022_K	HEXACHLOROCYCLOPENTADIENE	250	U	250	UJ	SVLL, CCL, SGL	UG/KG
					HEXACHLOROETHANE	250	U	250	UJ	SGL	UG/KG
					ISOPHORONE	250	U	250	UJ	SGL	UG/KG
					NITROBENZENE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIMETHYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODI-N-PROPYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIPHENYLAMINE	250	U	250	UJ	SGL	UG/KG
SP4245	BNASIM D	T	SP4245-1	LORNG_SB01006_0-1_08042022_K	BENZO(K)FLUORANTHENE	12	U	12	UJ	LCL	UG/KG
					PYRENE	12	U	12	UJ	LCL	UG/KG
			SP4245-2	LORNG_SB01006_8-10_08042022_K	BENZO(K)FLUORANTHENE	10	U	10	UJ	LCL	UG/KG
					PYRENE	10	U	10	UJ	LCL	UG/KG
			SP4245-3	LORNG_SB07015_0-1_08042022_K	BENZO(K)FLUORANTHENE	460	LL	460	J	LCL	UG/KG
					PYRENE	2,000	L	2,000	J	LCL	UG/KG
			SP4245-4	LORNG_SB07015_8-10_08042022_K	BENZO(K)FLUORANTHENE	11	U	11	UJ	LCL	UG/KG
					PYRENE	11	U	11	UJ	LCL	UG/KG
			SP4245-5	LORNG_SB12009_0-1_08042022_K	BENZO(K)FLUORANTHENE	61	LL	61	J	LCL	UG/KG
					PYRENE	260	L	260	J	LCL	UG/KG
			SP4245-6	LORNG_SB12009_8-10_08042022_K	BENZO(K)FLUORANTHENE	11	U	11	UJ	LCL	UG/KG
					PYRENE	11	U	11	UJ	LCL	UG/KG
	SW6010 C	T	SP4245-1	LORNG_SB01006_0-1_08042022_K	SODIUM	38.9	J	41	U	LBM	MG/KG
			SP4245-2	LORNG_SB01006_8-10_08042022_K	SODIUM	49.4	J	49.4	U	LBM	MG/KG
			SP4245-3	LORNG_SB07015_0-1_08042022_K	SODIUM	64.6	J	64.6	U	LBM	MG/KG
	SW6010 C	T	SP4245-4	LORNG_SB07015_8-10_08042022_K	SODIUM	35.3	J	42	U	LBM	MG/KG
			SP4245-5	LORNG_SB12009_0-1_08042022_K	SODIUM	54.7	J	54.7	U	LBM	MG/KG
			SP4245-6	LORNG_SB12009_8-10_08042022_K	SODIUM	73.5	J	73.5	U	LBM	MG/KG

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SP4245	SW8081 B	T	SP4245-1	LORNG_SB01006_0-1_08042022_K	P,P'-DDD	1.7	JJ	1.7	J	CFD	UG/KG
			SP4245-3	LORNG_SB07015_0-1_08042022_K	BETA ENDOSULFAN	1.6	JJ	1.6	J	CFD	UG/KG
					ENDRIN ALDEHYDE	2	JJ	2	J	CFD	UG/KG
					ENDRIN KETONE	12	J	12	J	CFD	UG/KG
					P,P'-DDD	8.3	J	8.3	J	CFD	UG/KG
	SW8082 A	T	SP4245-4	LORNG_SB07015_8-10_08042022_K	PCB, TOTAL	86	U	86	UJ	SGL	UG/KG
					PCB-1016 (AROCLOR 1016)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1221 (AROCLOR 1221)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1232 (AROCLOR 1232)	11	U	11	UJ	SGL	UG/KG
					PCB-1242 (AROCLOR 1242)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1248 (AROCLOR 1248)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1254 (AROCLOR 1254)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1260 (AROCLOR 1260)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1262 (AROCLOR 1262)	9.4	U	9.4	UJ	SGL	UG/KG
					PCB-1268 (AROCLOR 1268)	9.4	U	9.4	UJ	SGL	UG/KG
	SW8270 D	T	SP4245-1	LORNG_SB01006_0-1_08042022_K	BENZALDEHYDE	1,300	LL	1,300	J	LCH, LCD	UG/KG
			SP4245-2	LORNG_SB01006_8-10_08042022_K	1,2,4-TRICHLOROBENZENE	260	U	260	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	260	U	260	UJ	SGL	UG/KG
					1,2-DIPHENYLHYDRAZINE	520	U	520	UJ	SGL	UG/KG
					1,3-DICHLOROBENZENE	260	U	260	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	260	U	260	UJ	SGL	UG/KG
					1-METHYLNAPHTHALENE	260	U	260	UJ	SGL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	260	U	260	UJ	SGL	UG/KG
					2,4-DINITROTOLUENE	260	U	260	UJ	SGL	UG/KG
					2,6-DINITROTOLUENE	260	U	260	UJ	SGL	UG/KG
					2-CHLORONAPHTHALENE	260	U	260	UJ	SGL	UG/KG
					2-NITROANILINE	640	U	640	UJ	SGL	UG/KG

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SP4245	SW8270 D	T	SP4245-2	LORNG_SB01006_8-10_08042022_K	3,3'-DICHLOROBENZIDINE	260	U	260	UJ	SGL	UG/KG
					3-NITROANILINE	640	U	640	UJ	SGL	UG/KG
					4-BROMOPHENYL PHENYL ETHER	260	U	260	UJ	SGL	UG/KG
					4-CHLOROANILINE	260	U	260	UJ	SGL	UG/KG
					4-CHLOROPHENYL PHENYL ETHER	260	U	260	UJ	SGL	UG/KG
					4-NITROANILINE	640	U	640	UJ	SGL	UG/KG
					BENZALDEHYDE	260	U	260	UJ	SGL	UG/KG
					BENZIDINE	1,200	U	1,200	UJ	SGL	UG/KG
					BENZYL BUTYL PHTHALATE	260	U	260	UJ	SGL	UG/KG
					BIPHENYL (DIPHENYL)	260	U	260	UJ	SGL	UG/KG
					BIS(2-CHLOROETHOXY) METHANE	260	U	260	UJ	SGL	UG/KG
					BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	260	U	260	UJ	SGL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	260	U	260	UJ	SGL	UG/KG
					CARBAZOLE	260	U	260	UJ	SGL	UG/KG
					DIBENZOFURAN	260	U	260	UJ	SGL	UG/KG
					DIETHYL PHTHALATE	260	U	260	UJ	SGL	UG/KG
					DIMETHYL PHTHALATE	260	U	260	UJ	SGL	UG/KG
					DI-N-BUTYL PHTHALATE	260	U	260	UJ	SGL	UG/KG
					DI-N-OCTYLPHTHALATE	260	U	260	UJ	SGL	UG/KG
					HEXACHLOROBENZENE	260	U	260	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	260	U	260	UJ	SGL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	260	U	260	UJ	SGL	UG/KG
					HEXACHLOROETHANE	260	U	260	UJ	SGL	UG/KG
			SP4245-2	LORNG_SB01006_8-10_08042022_K	ISOPHORONE	260	U	260	UJ	SGL	UG/KG
					NITROBENZENE	260	U	260	UJ	SGL	UG/KG
					N-NITROSODIMETHYLAMINE	260	U	260	UJ	SGL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4245	SW8270 D	T			N-NITROSODI-N-PROPYLAMINE	260	U	260	UJ	SGL	UG/KG
					N-NITROSODIPHENYLAMINE	260	U	260	UJ	SGL	UG/KG
			SP4245-3	LORNG_SB07015_0-1_08042022_K	BENZALDEHYDE	260	JLL	260	J	LCH, LCD	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	140	J	140	J	LCD	UG/KG
			SP4245-4	LORNG_SB07015_8-10_08042022_K	BENZALDEHYDE	2,200	LL	2,200	J	LCH, LCD	UG/KG
			SP4245-5	LORNG_SB12009_0-1_08042022_K	BENZALDEHYDE	450	LL	450	J	LCH, LCD	UG/KG
			SP4245-6	LORNG_SB12009_8-10_08042022_K	BIS(2-ETHYLHEXYL) PHTHALATE	170	J	170	J	LCD	UG/KG
SP4287	SW8081 B	T	SP4287-1	LORNG_SB05016_0-1_08052022_K	P,P'-DDD	110		110	J	FDD	UG/KG
					P,P'-DDE	9.7		9.7	J	FDD	UG/KG
					P,P'-DDT	20		20	J	FDD	UG/KG
			SP4287-2	LORNG_SB05016_0-1_08052022FD_K	P,P'-DDD	310		310	J	FDD	UG/KG
					P,P'-DDE	19		19	J	FDD	UG/KG
					P,P'-DDT	43		43	J	FDD	UG/KG
	SW8082 A	T	SP4287-1	LORNG_SB05016_0-1_08052022_K	PCB, TOTAL	90	U	90	UJ	SGL	UG/KG
					PCB-1016 (AROCLOR 1016)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1221 (AROCLOR 1221)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1232 (AROCLOR 1232)	12	U	12	UJ	SGL	UG/KG
					PCB-1242 (AROCLOR 1242)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1248 (AROCLOR 1248)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1254 (AROCLOR 1254)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1260 (AROCLOR 1260)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1262 (AROCLOR 1262)	9.8	U	9.8	UJ	SGL	UG/KG
					PCB-1268 (AROCLOR 1268)	9.8	U	9.8	UJ	SGL	UG/KG
			SP4287-1	LORNG_SB05016_0-1_08052022_K	ACETONE	12	U	12	UJ	FDD	UG/KG
					1,1,1,2-TETRACHLOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1,1-TRICHLOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	2.1	U	2.1	UJ	SGL, ISL	UG/KG

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SP4287	SW8260C	T	SP4287-2	LORNG_SB05016_0-1_08052022FD_K	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1,2-TRICHLOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1-DICHLOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1-DICHLOROETHENE	2.1	U	2.1	UJ	SGL	UG/KG
					1,1-DICHLOROPROPENE	2.1	U	2.1	UJ	SGL	UG/KG
					1,2,3-TRICHLOROBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2,3-TRICHLOROPROPANE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2,4-TRICHLOROBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2,4-TRIMETHYLBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2.1	U	2.1	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,2-DICHLOROETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,2-DICHLOROPROPANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,3-DICHLOROBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					1,3-DICHLOROPROPANE	2.1	U	2.1	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					2,2-DICHLOROPROPANE	2.1	U	2.1	UJ	SGL	UG/KG
					2-CHLOROTOLUENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					2-HEXANONE	11	U	11	UJ	SGL	UG/KG
					4-CHLOROTOLUENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					ACETONE	59		59	J	SGL, FDD	UG/KG
					BENZENE	2.1	U	2.1	UJ	SGL	UG/KG
					BROMOBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG

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SP4287	SW8260C	T	SP4287-2	LORNG_SB05016_0-1_08052022FD_K	BROMOCHLOROMETHANE	3.6	J	3.6	J	SGL	UG/KG
					BROMODICHLOROMETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					BROMOFORM	2.1	U	2.1	UJ	SGL	UG/KG
					BROMOMETHANE	4.2	U	4.2	UJ	SGL	UG/KG
					CARBON DISULFIDE	2.8	J	2.8	J	SGL	UG/KG
					CARBON TETRACHLORIDE	2.1	U	2.1	UJ	SGL	UG/KG
					CHLOROBENZENE	2.1	U	2.1	UJ	SGL	UG/KG
					CHLOROETHANE	4.2	U	4.2	UJ	SGL	UG/KG
					CHLOROFORM	2.1	U	2.1	UJ	SGL	UG/KG
					CHLOROMETHANE	4.2	U	4.2	UJ	SGL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	2.1	U	2.1	UJ	SGL	UG/KG
					CIS-1,3-DICHLOROPROPENE	2.1	U	2.1	UJ	SGL	UG/KG
					CYCLOHEXANE	2	J	2	J	SGL	UG/KG
					DIBROMOCHLOROMETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					DIBROMOMETHANE	2.1	U	2.1	UJ	SGL	UG/KG
					DICHLORODIFLUOROMETHANE	4.2	U	4.2	UJ	SGL	UG/KG
					ETHYLBENZENE	0.85	J	0.85	J	SGL	UG/KG
					HEXACHLOROBUTADIENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					IODOMETHANE (METHYL IODIDE)	2.1	U	2.1	UJ	SGL	UG/KG
					ISOPROPYLBENZENE (CUMENE)	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	4.2	U	4.2	UJ	SGL	UG/KG
					METHYL ACETATE	2.5	U	2.5	UJ	SGL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	7.8	J	7.8	J	SGL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	11	U	11	UJ	SGL	UG/KG
					METHYLCYCLOHEXANE	2.1	U	2.1	UJ	SGL	UG/KG
					METHYLENE CHLORIDE	11	U	11	UJ	SGL	UG/KG

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SP4287	SW8260C	T	SP4287-2	LORNG_SB05016_0-1_08052022FD_K	NAPHTHALENE	0.92	J	0.92	J	SGL, ISL	UG/KG
					N-BUTYLBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					N-PROPYLBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	2.1	U	2.1	UJ	SGL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	1.4	J	1.4	J	SGL, ISL	UG/KG
					SEC-BUTYLBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					STYRENE	2.1	U	2.1	UJ	SGL	UG/KG
					T-BUTYLBENZENE	2.1	U	2.1	UJ	SGL, ISL	UG/KG
					TERT-BUTYL METHYL ETHER	2.1	U	2.1	UJ	SGL	UG/KG
					TETRACHLOROETHYLENE(PCE)	2.1	U	2.1	UJ	SGL	UG/KG
					TOLUENE	1.4	J	1.4	J	SGL	UG/KG
					TRANS-1,2-DICHLOROETHENE	2.1	U	2.1	UJ	SGL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	2.1	U	2.1	UJ	SGL	UG/KG
					TRICHLOROETHYLENE (TCE)	2.1	U	2.1	UJ	SGL	UG/KG
					TRICHLOROFLUOROMETHANE	4.2	U	4.2	UJ	SGL	UG/KG
					VINYL ACETATE	2.1	U	2.1	UJ	SGL	UG/KG
					VINYL CHLORIDE	4.2	U	4.2	UJ	SGL	UG/KG
	SW8270D	T	SP4287-1	LORNG_SB05016_0-1_08052022_K	BENZALDEHYDE	320	JLL	320	J	LCH, LCD	UG/KG
			SP4287-2	LORNG_SB05016_0-1_08052022FD_K	BENZALDEHYDE	360	JLL	360	J	LCH, LCD	UG/KG
SP4356	LYDKHN	T	SP4356-1	LORNG_SB20009_0-1_08082022_K	TOTAL ORGANIC CARBON	14,000		14,000	J	FDD	UG/G
			SP4356-2	LORNG_SB20009_0-1_08082022FD_K	TOTAL ORGANIC CARBON	8,100		8,100	J	FDD	UG/G
	SW6010C	T	SP4356-5	LORNG_SB24003_0-1_08082022_K	SODIUM	50	J	50	U	LBM	MG/KG
	SW8270D	T	SP4356-5	LORNG_SB24003_0-1_08082022_K	BENZALDEHYDE	220	JLL	220	J	LCH, LCD	UG/KG

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4357	SW6010C	T	SP4357-1	LORNG_SB24003_8-10_08082022_K	SODIUM	57.3	J	57.3	U	LBM	MG/KG
			SP4357-2	LORNG_SB24003_8-10_08082022FDK	SODIUM	49.5	J	49.5	U	LBM	MG/KG
	SW8260C	T	SP4357-2	LORNG_SB24003_8-10_08082022FDK	TOLUENE	1.6	J	2.1	U	TBL	UG/KG
	SW8270D	T	SP4357-2	LORNG_SB24003_8-10_08082022FDK	1,2,4-TRICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DIPHENYLHYDRAZINE	500	U	500	UJ	SGL	UG/KG
					1,3-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1-METHYLNAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	250	U	250	UJ	SGL	UG/KG
					2,4-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2,6-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2-CHLORONAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					3,3'-DICHLOROBENZIDINE	250	U	250	UJ	SGL	UG/KG
					3-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					4-BROMOPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-CHLOROANILINE	250	U	250	UJ	SGL	UG/KG
					4-CHLOROPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					BENZALDEHYDE	250	U	250	UJ	SGL	UG/KG
					BENZIDINE	1,100	U	1,100	UJ	SGL	UG/KG
					BENZYL BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					BIPHENYL (DIPHENYL)	250	U	250	UJ	SGL	UG/KG
					BIS(2-CHLOROETHOXY) METHANE	250	U	250	UJ	SGL	UG/KG

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4357	SW8270 D	T	SP4357-2	LORNG_SB24003_8-10_08082022FDK	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	250	U	250	UJ	SGL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	250	U	250	UJ	SGL	UG/KG
					CARBAZOLE	250	U	250	UJ	SGL	UG/KG
					DIBENZOFURAN	250	U	250	UJ	SGL	UG/KG
					DIETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DIMETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-OCTYLPHTHALATE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROETHANE	250	U	250	UJ	SGL	UG/KG
					ISOPHORONE	250	U	250	UJ	SGL	UG/KG
					NITROBENZENE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIMETHYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODI-N-PROPYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIPHENYLAMINE	250	U	250	UJ	SGL	UG/KG

Notes:

J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
CCL = Continuing calibration standard recovery less than lower control limit
CFD = Dual column RPD criteria exceeded
DS = Serial dilution percent difference exceeded control limit
LCL = LCS recovery less than lower control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
PDSL = post digestion spike (PDS) recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
SGL = Surrogate recovery less than lower control limit

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

FDD = Field duplicate RPD criteria exceeded
ICD = Initial calibration RSD exceeded
ISL = Internal standard response less than lower control limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCH = LCS recovery greater than upper control limit
SVLL = Second source verification standard recovery less than lower control limit
TBL = Trip blank concentration less than reporting limit
NG/L = nanograms per liter
UG/L = micrograms per liter

Prepared by:AKN
Date:12/9/22
Checked by: ALJ
Date: 12/14/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97923	LORNG_SB18029_0-1_08052022	LORNG_SB18029_0-1_08052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.3	U	**0.73**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**9.1**		**11.8**		26	
				Perfluorooctanoic acid (PFOA) (UG/KG)	**0.78**	J	**0.92**	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.3	U	1.3	U	NC	
	LORNG_SB18029_12-14_08052022	LORNG_SB18029_12-14_08052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97923	LORNG_SB18029_12-14_08052022	LORNG_SB18029_12-14_08052022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	
FA97926	LORNG_SB05018_0-1_08042022	LORNG_SB05018_0-1_08042022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	**0.58**	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	**0.57**	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	**0.84**	J	**0.84**	J	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	**1.3**	J	**1.3**	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**2**	J	**2**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	**0.89**	J	**0.9**	J	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	**0.56**	J	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	**1.5**	J	**1.7**	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**18.3**		**18.9**		3	
				Perfluorooctanoic acid (PFOA) (UG/KG)	**1.6**	J	**1.8**	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	**1**	J	**1.1**	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	**0.6**	J	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97959	LORNG_SB05016_0-1_08052022	LORNG_SB05016_0-1_08052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	**2.9**	J	**0.75**	J	118	FDD
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	**2.5**	J	**0.62**	J	121	FDD
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	5.9	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	**0.85**	J	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	**0.94**	J	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	**0.91**	J	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**5**	J	**1.5**	J	108	FDD
				Perfluorohexanoic acid (PFHxA) (UG/KG)	**0.74**	J	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	**1.4**	J	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	**1.8**	J	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	**4.4**	J	**1.5**	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**113**	J	**22.9**	J	133	FDD
				Perfluorooctanoic acid (PFOA) (UG/KG)	**1.8**	J	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	**1.7**	J	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	**0.74**	J	1.1	U	NC	
	LORNG_SB22004_13-15_08052022	LORNG_SB22004_13-15_080522FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	5.5	UJ	1.1	U	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97959	LORNG_SB22004_13-15_08052022	LORNG_SB22004_13-15_080522FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB22004_8-10_08052022	LORNG_SB22004_8-10_08052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	5.5	UJ	5.5	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	5.5	UJ	5.5	U	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**0.75**	J	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98012	LORNG_SB01015_0-1_08082022	LORNG_SB01015_0-1_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.55	U	0.64	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.55	U	0.64	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.55	U	0.64	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.55	U	0.64	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.55	UJ	0.64	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**0.4**	J	**0.41**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.55	U	**0.34**	J	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**6.2**		**6.8**		9	
				Perfluorooctanoic acid (PFOA) (UG/KG)	**0.37**	J	**0.37**	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.55	U	0.64	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	**0.39**	J	**0.4**	J	NC	
	LORNG_SB01015_11.5-13.5_8822	LORNG_SB01015_11.5-13.5_8822FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.54	U	0.54	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.54	U	0.54	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	**0.54**	J	**0.55**	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.54	U	0.54	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.54	U	0.54	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.54	U	0.54	U	NC	

Prepared by: AKN 12/9/22
Checked by:

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98012	LORNG_SB01015_11.5-13.5_8822	LORNG_SB01015_11.5-13.5_8822FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**6.9**		**7.8**		12	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.54	U	0.54	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.54	U	0.54	U	NC	
	LORNG_SB01015_8-10_08082022	LORNG_SB01015_8-10_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	**0.3**	J	0.56	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	**0.38**	J	**0.46**	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**0.41**	J	0.56	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**9.4**	J	**3.8**	J	85	FDD
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.56	U	0.56	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98012	LORNG_SB20009_0-1_08082022	LORNG_SB20009_0-1_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.55	U	0.57	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.55	U	0.57	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.55	U	0.57	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.55	U	0.57	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.55	U	0.57	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	**0.55**	J	**0.72**	J	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**0.66**	J	**0.97**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	**0.41**	J	**0.59**	J	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**14.1**		**21.3**		41	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.55	U	0.57	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.55	U	0.57	U	NC	
	LORNG_SB20009_8-10_08082022	LORNG_SB20009_8-10_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.55	U	0.54	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.55	U	0.54	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.55	U	0.54	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.55	U	0.54	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.55	U	0.54	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**1**	J	**1**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.55	U	0.54	U	NC	

Prepared by: AKN 12/9/22
Checked by:

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98012	LORNG_SB20009_8-10_08082022	LORNG_SB20009_8-10_08082022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**6**		**8.1**		30	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.55	U	0.54	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.55	U	0.54	U	NC	
	LORNG_SB24003_11.5-13.5_8822	LORNG_SB24003_11.5-13.5_8822FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.56	U	0.56	U	NC	

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FA98012	LORNG_SB24003_8-10_08082022	LORNG_SB24003_8-10_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.55	U	0.55	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.55	U	0.55	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.55	U	0.55	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.55	U	0.55	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.55	U	0.55	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.55	U	0.55	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.55	U	0.55	U	NC	
FA98012	LORNG_SB20009_13-15_08082022	LORNG_SB20009_13-15_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.56	U	0.56	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**0.88**	J	**0.8**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.56	U	0.56	U	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98012				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**6.8**		**6.4**		6	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.56	U	0.56	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.56	U	0.56	U	NC	
FA98221	LORNG_SB01019_0-1_08162022	LORNG_SB01019_0-1_08162022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB01019_0-1_08162022	LORNG_SB01019_0-1_08162022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**5.7**		**6.3**		10	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	

Prepared by: AKN 12/9/22
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Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98221	LORNG_SB01025_8-10_08162022	LORNG_SB01025_8-10_08162022FD	PFAS	Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**0.57**	**J**	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	

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Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98221	LORNG_SB20014_7-8_08162022	LORNG_SB20014_7-8_08162022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
FA98256	LORNG_SB05021_0-1_08172022	LORNG_SB05021_0-1_08172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98256	LORNG_SB05021_0-1_08172022	LORNG_SB05021_0-1_08172022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**4**		**3.7**		8	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB05028_0-1_08172022	LORNG_SB05028_0-1_08172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**23.2**		**16.1**		36	
				Perfluorooctanoic acid (PFOA) (UG/KG)	**0.87**	J	**0.64**	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98256	LORNG_SB13026_8-10_08172022	LORNG_SB13026_8-10_08172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
FA98256	LORNG_SB05023_7-8_08172022	LORNG_SB05023_7-8_08172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	**0.74**	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	**0.64**	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**1.1**	J	**1.4**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98256				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**13.2**		**18.9**		35.5	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
FA98280	LORNG_SB12017_0-1_08182022	LORNG_SB12017_0-1_08182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	5.2	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1	U	NC	
	LORNG_SB12017_0-1_08182022	LORNG_SB12017_0-1_08182022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1	U	NC	
				4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	

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Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98280	LORNG_SB12019_8-10_08182022	LORNG_SB12019_8-10_08182022FD	PFAS	Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB13027_8-10_08182022	LORNG_SB13027_8-10_08182022FD	PFAS	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98312	LORNG_SB06015_0-1_08192022	LORNG_SB06015_0-1_08192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**5.2**		**4.9**		6	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB21004_0-1_08182022	LORNG_SB21004_0-1_08182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98312	LORNG_SB21004_0-1_08182022	LORNG_SB21004_0-1_08182022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB21005_0-1_08182022	LORNG_SB21005_0-1_08182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**0.61**	J	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.1	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98312	LORNG_SB22009_8-10_08192022	LORNG_SB22009_8-10_08192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	2.4	U	2.5	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	2.4	U	2.5	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	2.4	U	2.5	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	2.4	U	2.5	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	2.4	U	2.5	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**2.1**	J	**1.7**	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	2.4	U	2.5	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	2.4	U	2.5	U	NC	
FA98345	LORNG_SB07017_0-1_08202022	LORNG_SB07017_0-1_08202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.1	U	NC	

Prepared by: AKN 12/9/22
Checked by:

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98345	LORNG_SB07017_0-1_08202022	LORNG_SB07017_0-1_08202022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**3.7**		**2.9**		24	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.1	U	NC	
	LORNG_SB07018_8-10_08202022	LORNG_SB07018_8-10_08202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	UJ	6	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	**1.8**	J	**2.3**	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	UJ	6	U	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	**0.72**	J	**0.89**	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98345	LORNG_SB07019_8-9_08192022	LORNG_SB07019_8-9_08192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB07021_8-10_08202022	LORNG_SB07021_8-10_08202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98345	LORNG_SB07021_8-10_08202022	LORNG_SB07021_8-10_08202022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB07024_0-1_08202022	LORNG_SB07024_0-1_08202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**12.8**		**12.8**		0	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98345	LORNG_SB18032_0-1_08192022	LORNG_SB18032_0-1_08192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	**2.8**		**2.3**		20	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	
SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	Metals	ALUMINUM (MG/KG)	**15,700**		**16,100**		3	
				ANTIMONY (MG/KG)	0.98	U	0.24	J	NC	
				ARSENIC (MG/KG)	**6.56**		**6.57**		0	
				BARIUM (MG/KG)	**49.1**		**44.8**		9	
				BERYLLIUM (MG/KG)	**0.425**	J	**0.413**	J	NC	
				CADMIUM (MG/KG)	**0.057**	J	0.51	U	NC	
				CALCIUM (MG/KG)	**8,910**		**9,080**		2	
				CHROMIUM, TOTAL (MG/KG)	**38.3**		**42.7**		11	
				COBALT (MG/KG)	**10.3**		**11**		7	
				COPPER (MG/KG)	**17.6**		**18.4**		4	
				IRON (MG/KG)	**27,300**		**28,400**		4	
				LEAD (MG/KG)	**75.6**		**71.6**		5	
				MAGNESIUM (MG/KG)	**7,020**		**7,180**		2	
				MANGANESE (MG/KG)	**622**		**673**		8	
				MERCURY (MG/KG)	**0.042**		**0.048**		13	

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Checked by:

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	Metals	NICKEL (MG/KG)	**33.6**		**34.8**		4	
				POTASSIUM (MG/KG)	**1,410**		**1,360**		4	
				SELENIUM (MG/KG)	**0.79**	J	**0.75**	J	NC	
				SILVER (MG/KG)	**0.999**	J	**0.922**	J	NC	
				SODIUM (MG/KG)	**166**		**148**		11	
				THALLIUM (MG/KG)	**0.29**	J	**0.51**	J	NC	
				VANADIUM (MG/KG)	**29.7**		**29**		2	
				ZINC (MG/KG)	**79**		**77.5**		2	
			PCBs	PCB, TOTAL (UG/KG)	90	UJ	88	U	NC	SGL
				PCB-1016 (AROCLOR 1016) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1221 (AROCLOR 1221) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1232 (AROCLOR 1232) (UG/KG)	12	UJ	11	U	NC	SGL
				PCB-1242 (AROCLOR 1242) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1248 (AROCLOR 1248) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1254 (AROCLOR 1254) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1260 (AROCLOR 1260) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1262 (AROCLOR 1262) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
				PCB-1268 (AROCLOR 1268) (UG/KG)	9.8	UJ	9.6	U	NC	SGL
			Pesticides	ALDRIN (UG/KG)	0.98	U	0.96	U	NC	
				ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.96	U	NC	
				ALPHA ENDOSULFAN (UG/KG)	0.98	U	0.96	U	NC	
				BETA BHC (BETA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.96	U	NC	
				BETA ENDOSULFAN (UG/KG)	1.9	U	1.8	U	NC	
				CIS-CHLORDANE (UG/KG)	0.98	U	0.96	U	NC	
				DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.96	U	NC	
				DIELDRIN (UG/KG)	1.9	U	1.8	U	NC	
				ENDOSULFAN SULFATE (UG/KG)	1.9	U	1.8	U	NC	
				ENDRIN (UG/KG)	1.9	U	1.8	U	NC	
				ENDRIN ALDEHYDE (UG/KG)	1.9	U	1.8	U	NC	
				ENDRIN KETONE (UG/KG)	**3.4**	J	1.8	U	NC	
				GAMMA BHC (LINDANE) (UG/KG)	0.98	U	0.96	U	NC	
				GAMMA-CHLORDANE (UG/KG)	0.98	U	0.96	U	NC	
				HEPTACHLOR (UG/KG)	0.98	U	0.96	U	NC	
				HEPTACHLOR EPOXIDE (UG/KG)	0.98	U	0.96	U	NC	
				METHOXYCHLOR (UG/KG)	9.8	U	9.6	U	NC	
				P,P'-DDD (UG/KG)	**110**	J	**310**	J	95	FDD
				P,P'-DDE (UG/KG)	**9.7**	J	**19**	J	65	FDD
				P,P'-DDT (UG/KG)	**20**	J	**43**	J	73	FDD
				TOXAPHENE (UG/KG)	19	U	18	U	NC	

Table 4 - Field Duplicate RPD Summary

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SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	SVOCs	1,2,4-TRICHLOROBENZENE (UG/KG)	260	U	290	U	NC	
				1,2-DICHLOROBENZENE (UG/KG)	260	U	290	U	NC	
				1,2-DIPHENYLHYDRAZINE (UG/KG)	530	U	570	U	NC	
				1,3-DICHLOROBENZENE (UG/KG)	260	U	290	U	NC	
				1,4-DICHLOROBENZENE (UG/KG)	260	U	290	U	NC	
				1-METHYLNAPHTHALENE (UG/KG)	260	U	290	U	NC	
				2,2'-OXYBIS(1-CHLORO)PROPANE (UG/KG)	260	U	290	U	NC	
				2,3,4,6-TETRACHLOROPHENOL (UG/KG)	260	U	290	U	NC	
				2,4,5-TRICHLOROPHENOL (UG/KG)	650	U	710	U	NC	
				2,4,6-TRICHLOROPHENOL (UG/KG)	260	U	290	U	NC	
				2,4-DICHLOROPHENOL (UG/KG)	260	U	290	U	NC	
				2,4-DIMETHYLPHENOL (UG/KG)	260	U	290	U	NC	
				2,4-DINITROPHENOL (UG/KG)	650	U	710	U	NC	
				2,4-DINITROTOLUENE (UG/KG)	260	U	290	U	NC	
				2,6-DINITROTOLUENE (UG/KG)	260	U	290	U	NC	
				2-CHLORONAPHTHALENE (UG/KG)	260	U	290	U	NC	
				2-CHLOROPHENOL (UG/KG)	260	U	290	U	NC	
				2-METHYLPHENOL (O-CRESOL) (UG/KG)	260	U	290	U	NC	
				2-NITROANILINE (UG/KG)	650	U	710	U	NC	
				2-NITROPHENOL (UG/KG)	260	U	290	U	NC	
				3,3'-DICHLOROBENZIDINE (UG/KG)	260	U	290	U	NC	
				3-NITROANILINE (UG/KG)	650	U	710	U	NC	
				4,6-DINITRO-2-METHYLPHENOL (UG/KG)	650	U	710	U	NC	
				4-BROMOPHENYL PHENYL ETHER (UG/KG)	260	U	290	U	NC	
				4-CHLORO-3-METHYLPHENOL (UG/KG)	260	U	290	U	NC	
				4-CHLOROANILINE (UG/KG)	260	U	290	U	NC	
				4-CHLOROPHENYL PHENYL ETHER (UG/KG)	260	U	290	U	NC	
				4-NITROANILINE (UG/KG)	650	U	710	U	NC	
				4-NITROPHENOL (UG/KG)	650	U	710	U	NC	
				BENZALDEHYDE (UG/KG)	**320**	J	**360**	J	NC	LCH, LCD
				BENZIDINE (UG/KG)	1,200	U	1,300	U	NC	
				BENZOIC ACID (UG/KG)	650	U	710	U	NC	
				BENZYL ALCOHOL (UG/KG)	530	U	570	U	NC	
				BENZYL BUTYL PHTHALATE (UG/KG)	260	U	290	U	NC	
				BIPHENYL (DIPHENYL) (UG/KG)	260	U	290	U	NC	
				BIS(2-CHLOROETHOXY) METHANE (UG/KG)	260	U	290	U	NC	
				BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) (UG/KG)	260	U	290	U	NC	
				BIS(2-ETHYLHEXYL) PHTHALATE (UG/KG)	**150**	J	**140**	J	NC	
				CARBAZOLE (UG/KG)	260	U	290	U	NC	
				CRESOLS, M & P (UG/KG)	260	U	290	U	NC	

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SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	SVOCs	DIBENZOFURAN (UG/KG)	260	U	290	U	NC	
				DIETHYL PHTHALATE (UG/KG)	260	U	290	U	NC	
				DIMETHYL PHTHALATE (UG/KG)	260	U	290	U	NC	
				DI-N-BUTYL PHTHALATE (UG/KG)	260	U	290	U	NC	
				DI-N-OCTYLPHTHALATE (UG/KG)	260	U	290	U	NC	
				HEXACHLOROBENZENE (UG/KG)	260	U	290	U	NC	
				HEXACHLOROBUTADIENE (UG/KG)	260	U	290	U	NC	
				HEXACHLOROCYCLOPENTADIENE (UG/KG)	260	U	290	U	NC	
				HEXACHLOROETHANE (UG/KG)	260	U	290	U	NC	
				ISOPHORONE (UG/KG)	260	U	290	U	NC	
				NITROBENZENE (UG/KG)	260	U	290	U	NC	
				N-NITROSODIMETHYLAMINE (UG/KG)	260	U	290	U	NC	
				N-NITROSODI-N-PROPYLAMINE (UG/KG)	260	U	290	U	NC	
				N-NITROSODIPHENYLAMINE (UG/KG)	260	U	290	U	NC	
				PHENOL (UG/KG)	260	U	290	U	NC	
			SVOCs by SIM	2-METHYLNAPHTHALENE (UG/KG)	**4.1**	J	**3.5**	J	NC	
				ACENAPHTHENE (UG/KG)	11	U	12	U	NC	
				ACENAPHTHYLENE (UG/KG)	11	U	12	U	NC	
				ANTHRACENE (UG/KG)	**6.4**	J	**7.1**	J	NC	
				BENZO(A)ANTHRACENE (UG/KG)	**26**		**39**		40	
				BENZO(A)PYRENE (UG/KG)	**34**		**51**		40	
				BENZO(B)FLUORANTHENE (UG/KG)	**52**		**69**		28	
				BENZO(G,H,I)PERYLENE (UG/KG)	**30**		**39**		26	
				BENZO(K)FLUORANTHENE (UG/KG)	**18**	J	**27**		40	
				CHRYSENE (UG/KG)	**35**		**46**		27	
				DIBENZ(A,H)ANTHRACENE (UG/KG)	11	U	12	U	NC	
				FLUORANTHENE (UG/KG)	**54**		**74**		31	
				FLUORENE (UG/KG)	11	U	12	U	NC	
				INDENO(1,2,3-C,D)PYRENE (UG/KG)	**29**		**39**		29	
				NAPHTHALENE (UG/KG)	11	U	12	U	NC	
				PENTACHLOROPHENOL (UG/KG)	53	U	58	U	NC	
				PHENANTHRENE (UG/KG)	**30**		**34**		12	
				PYRENE (UG/KG)	**42**		**63**		40	
			VOCs	1,1,1,2-TETRACHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1,1-TRICHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1,2-TRICHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1-DICHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,1-DICHLOROETHENE (UG/KG)	2.4	U	2.1	UJ	NC	

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SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	VOCs	1,1-DICHLOROPROPENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2,3-TRICHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2,3-TRICHLOROPROPANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2,4-TRIMETHYLBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2-DICHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2-DICHLOROETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,2-DICHLOROPROPANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/KG)	2.4	U	2.1	UJ	NC	
				1,3-DICHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,3-DICHLOROPROPANE (UG/KG)	2.4	U	2.1	UJ	NC	
				1,4-DICHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				2,2-DICHLOROPROPANE (UG/KG)	2.4	U	2.1	UJ	NC	
				2-CHLOROTOLUENE (UG/KG)	2.4	U	2.1	UJ	NC	
				2-HEXANONE (UG/KG)	12	U	11	UJ	NC	
				4-CHLOROTOLUENE (UG/KG)	2.4	U	2.1	UJ	NC	
				ACETONE (UG/KG)	12	UJ	59	J	NC	FDD
				BENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				BROMOBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				BROMOCHLOROMETHANE (UG/KG)	2.4	U	3.6	J	NC	
				BROMODICHLOROMETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				BROMOFORM (UG/KG)	2.4	U	2.1	UJ	NC	
				BROMOMETHANE (UG/KG)	4.8	U	4.2	UJ	NC	
				CARBON DISULFIDE (UG/KG)	**0.84**	J	**2.8**	J	NC	
				CARBON TETRACHLORIDE (UG/KG)	2.4	U	2.1	UJ	NC	
				CHLOROBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				CHLOROETHANE (UG/KG)	4.8	U	4.2	UJ	NC	
				CHLOROFORM (UG/KG)	2.4	U	2.1	UJ	NC	
				CHLOROMETHANE (UG/KG)	4.8	U	4.2	UJ	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/KG)	2.4	U	2.1	UJ	NC	
				CIS-1,3-DICHLOROPROPENE (UG/KG)	2.4	U	2.1	UJ	NC	
				CYCLOHEXANE (UG/KG)	2.4	U	2	J	NC	
				DIBROMOCHLOROMETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				DIBROMOMETHANE (UG/KG)	2.4	U	2.1	UJ	NC	
				DICHLORODIFLUOROMETHANE (UG/KG)	4.8	U	4.2	UJ	NC	
				ETHYLBENZENE (UG/KG)	2.4	U	0.85	J	NC	
				HEXACHLOROBUTADIENE (UG/KG)	2.4	U	2.1	UJ	NC	
				IODOMETHANE (METHYL IODIDE) (UG/KG)	2.4	U	2.1	UJ	NC	

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SP4287	LORNG_SB05016_0-1_08052022_K	LORNG_SB05016_0-1_08052022FD_K	VOCs	ISOPROPYLBENZENE (CUMENE) (UG/KG)	2.4	U	2.1	UJ	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/KG)	4.8	U	4.2	UJ	NC	
				METHYL ACETATE (UG/KG)	2.9	U	2.5	UJ	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/KG)	12	U	7.8	J	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/KG)	12	U	11	UJ	NC	
				METHYLCYCLOHEXANE (UG/KG)	2.4	U	2.1	UJ	NC	
				METHYLENE CHLORIDE (UG/KG)	12	U	11	UJ	NC	
				NAPHTHALENE (UG/KG)	2.4	U	0.92	J	NC	
				N-BUTYLBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				N-PROPYLBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/KG)	2.4	U	2.1	UJ	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/KG)	2.4	U	1.4	J	NC	
				SEC-BUTYLBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				STYRENE (UG/KG)	2.4	U	2.1	UJ	NC	
				T-BUTYLBENZENE (UG/KG)	2.4	U	2.1	UJ	NC	
				TERT-BUTYL METHYL ETHER (UG/KG)	2.4	U	2.1	UJ	NC	
				TETRACHLOROETHYLENE(PCE) (UG/KG)	2.4	U	2.1	UJ	NC	
				TOLUENE (UG/KG)	2.4	U	1.4	J	NC	
				TRANS-1,2-DICHLOROETHENE (UG/KG)	2.4	U	2.1	UJ	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/KG)	2.4	U	2.1	UJ	NC	
				TRICHLOROETHYLENE (TCE) (UG/KG)	2.4	U	2.1	UJ	NC	
				TRICHLOROFLUOROMETHANE (UG/KG)	4.8	U	4.2	UJ	NC	
				VINYL ACETATE (UG/KG)	2.4	U	2.1	UJ	NC	
				VINYL CHLORIDE (UG/KG)	4.8	U	4.2	UJ	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	**85**		**85**		0	
				TOTAL ORGANIC CARBON (UG/G)	**14,000**		**16,000**		13	
	LORNG_SB22004_8-10_08052022_K	LORNG_SB22004_8-10_08052022FDK	WetChem	SOLIDS, PERCENT (PERCENT)	**91**		**91**		0	
				TOTAL ORGANIC CARBON (UG/G)	**2,400**		**2,500**		4	
SP4356	LORNG_SB20009_0-1_08082022_K	LORNG_SB20009_0-1_08082022FD_K	WetChem	SOLIDS, PERCENT (PERCENT)	**91**		**89**		2	
				TOTAL ORGANIC CARBON (UG/G)	**14,000**	J	**8,100**	J	53	FDD
	LORNG_SB20009_8-10_08082022_K	LORNG_SB20009_8-10_08082022FDK	WetChem	SOLIDS, PERCENT (PERCENT)	**91**		**90**		1	
				TOTAL ORGANIC CARBON (UG/G)	**1,000**		**1,000**		0	

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SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	Metals	ALUMINUM (MG/KG)	**17,000**		**17,000**		0	
				ANTIMONY (MG/KG)	**0.3**	J	**0.27**	J	NC	
				ARSENIC (MG/KG)	**9.38**		**6.93**		30	
				BARIUM (MG/KG)	**49.7**		**37.7**		27	
				BERYLLIUM (MG/KG)	**0.484**		**0.426**		13	
				CADMIUM (MG/KG)	0.4	U	0.073	J	NC	
				CALCIUM (MG/KG)	**7,890**		**6,720**		16	
				CHROMIUM, TOTAL (MG/KG)	**36.3**		**38.3**		5	
				COBALT (MG/KG)	**13.1**		**12.6**		4	
				COPPER (MG/KG)	**21.9**		**17.8**		21	
				IRON (MG/KG)	**30,100**		**30,600**		2	
				LEAD (MG/KG)	**12.4**		**12.7**		2	
				MAGNESIUM (MG/KG)	**7,800**		**8,030**		3	
				MANGANESE (MG/KG)	**489**		**446**		9	
				MERCURY (MG/KG)	**0.032**	J	**0.049**		42	
				NICKEL (MG/KG)	**44.8**		**43**		4	
				POTASSIUM (MG/KG)	**1,590**		**1,240**		25	
				SELENIUM (MG/KG)	**0.44**	J	**0.3**	J	NC	
				SILVER (MG/KG)	**0.489**	J	**0.605**	J	NC	
				SODIUM (MG/KG)	57.3	U	49.5	U	NC	LBM
				THALLIUM (MG/KG)	**0.35**	J	**0.28**	J	NC	
				VANADIUM (MG/KG)	**23**		**21.8**		5	
				ZINC (MG/KG)	**58.6**		**59.2**		1	
			PCBs	PCB, TOTAL (UG/KG)	78	U	82	U	NC	
				PCB-1016 (AROCLOR 1016) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1221 (AROCLOR 1221) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1232 (AROCLOR 1232) (UG/KG)	9.9	U	10	U	NC	
				PCB-1242 (AROCLOR 1242) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1248 (AROCLOR 1248) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1254 (AROCLOR 1254) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1260 (AROCLOR 1260) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1262 (AROCLOR 1262) (UG/KG)	8.4	U	8.9	U	NC	
				PCB-1268 (AROCLOR 1268) (UG/KG)	8.4	U	8.9	U	NC	
			Pesticides	ALDRIN (UG/KG)	0.84	U	0.89	U	NC	
				ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.84	U	0.89	U	NC	
				ALPHA ENDOSULFAN (UG/KG)	0.84	U	0.89	U	NC	
				BETA BHC (BETA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.84	U	0.89	U	NC	
				BETA ENDOSULFAN (UG/KG)	1.6	U	1.7	U	NC	
				CIS-CHLORDANE (UG/KG)	0.84	U	0.89	U	NC	
				DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.84	U	0.89	U	NC	

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SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	Pesticides	DIELDRIN (UG/KG)	1.6	U	1.7	U	NC	
				ENDOSULFAN SULFATE (UG/KG)	1.6	U	1.7	U	NC	
				ENDRIN (UG/KG)	1.6	U	1.7	U	NC	
				ENDRIN ALDEHYDE (UG/KG)	1.6	U	1.7	U	NC	
				ENDRIN KETONE (UG/KG)	1.6	U	1.7	U	NC	
				GAMMA BHC (LINDANE) (UG/KG)	0.84	U	0.89	U	NC	
				GAMMA-CHLORDANE (UG/KG)	0.84	U	0.89	U	NC	
				HEPTACHLOR (UG/KG)	0.84	U	0.89	U	NC	
				HEPTACHLOR EPOXIDE (UG/KG)	0.84	U	0.89	U	NC	
				METHOXYCHLOR (UG/KG)	8.4	U	8.9	U	NC	
				P,P'-DDD (UG/KG)	1.6	U	1.7	U	NC	
				P,P'-DDE (UG/KG)	1.6	U	1.7	U	NC	
				P,P'-DDT (UG/KG)	1.6	U	1.7	U	NC	
				TOXAPHENE (UG/KG)	16	U	17	U	NC	
			SVOCs	1,2,4-TRICHLOROBENZENE (UG/KG)	240	U	250	UJ	NC	
				1,2-DICHLOROBENZENE (UG/KG)	240	U	250	UJ	NC	
				1,2-DIPHENYLHYDRAZINE (UG/KG)	490	U	500	UJ	NC	
				1,3-DICHLOROBENZENE (UG/KG)	240	U	250	UJ	NC	
				1,4-DICHLOROBENZENE (UG/KG)	240	U	250	UJ	NC	
				1-METHYLNAPHTHALENE (UG/KG)	240	U	250	UJ	NC	
				2,2'-OXYBIS(1-CHLORO)PROPANE (UG/KG)	240	U	250	UJ	NC	
				2,3,4,6-TETRACHLOROPHENOL (UG/KG)	240	U	250	U	NC	
				2,4,5-TRICHLOROPHENOL (UG/KG)	600	U	630	U	NC	
				2,4,6-TRICHLOROPHENOL (UG/KG)	240	U	250	U	NC	
				2,4-DICHLOROPHENOL (UG/KG)	240	U	250	U	NC	
				2,4-DIMETHYLPHENOL (UG/KG)	240	U	250	U	NC	
				2,4-DINITROPHENOL (UG/KG)	600	U	630	U	NC	
				2,4-DINITROTOLUENE (UG/KG)	240	U	250	UJ	NC	
				2,6-DINITROTOLUENE (UG/KG)	240	U	250	UJ	NC	
				2-CHLORONAPHTHALENE (UG/KG)	240	U	250	UJ	NC	
				2-CHLOROPHENOL (UG/KG)	240	U	250	U	NC	
				2-METHYLPHENOL (O-CRESOL) (UG/KG)	240	U	250	U	NC	
				2-NITROANILINE (UG/KG)	600	U	630	UJ	NC	
				2-NITROPHENOL (UG/KG)	240	U	250	U	NC	
				3,3'-DICHLOROBENZIDINE (UG/KG)	240	U	250	UJ	NC	
				3-NITROANILINE (UG/KG)	600	U	630	UJ	NC	
				4,6-DINITRO-2-METHYLPHENOL (UG/KG)	600	U	630	U	NC	
				4-BROMOPHENYL PHENYL ETHER (UG/KG)	240	U	250	UJ	NC	
				4-CHLORO-3-METHYLPHENOL (UG/KG)	240	U	250	U	NC	
				4-CHLOROANILINE (UG/KG)	240	U	250	UJ	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	SVOCs	4-CHLOROPHENYL PHENYL ETHER (UG/KG)	240	U	250	UJ	NC	
				4-NITROANILINE (UG/KG)	600	U	630	UJ	NC	
				4-NITROPHENOL (UG/KG)	600	U	630	U	NC	
				BENZALDEHYDE (UG/KG)	240	U	250	UJ	NC	
				BENZIDINE (UG/KG)	1,100	U	1,100	UJ	NC	
				BENZOIC ACID (UG/KG)	600	U	630	U	NC	
				BENZYL ALCOHOL (UG/KG)	490	U	71	J	NC	
				BENZYL BUTYL PHTHALATE (UG/KG)	240	U	250	UJ	NC	
				BIPHENYL (DIPHENYL) (UG/KG)	240	U	250	UJ	NC	
				BIS(2-CHLOROETHOXY) METHANE (UG/KG)	240	U	250	UJ	NC	
				BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) (UG/KG)	240	U	250	UJ	NC	
				BIS(2-ETHYLHEXYL) PHTHALATE (UG/KG)	240	U	250	UJ	NC	
				CARBAZOLE (UG/KG)	240	U	250	UJ	NC	
				CRESOLS, M & P (UG/KG)	240	U	250	U	NC	
				DIBENZOFURAN (UG/KG)	240	U	250	UJ	NC	
				DIETHYL PHTHALATE (UG/KG)	240	U	250	UJ	NC	
				DIMETHYL PHTHALATE (UG/KG)	240	U	250	UJ	NC	
				DI-N-BUTYL PHTHALATE (UG/KG)	240	U	250	UJ	NC	
				DI-N-OCTYLPHTHALATE (UG/KG)	240	U	250	UJ	NC	
				HEXACHLOROBENZENE (UG/KG)	240	U	250	UJ	NC	
				HEXACHLOROBUTADIENE (UG/KG)	240	U	250	UJ	NC	
				HEXACHLOROCYCLOPENTADIENE (UG/KG)	240	U	250	UJ	NC	
				HEXACHLOROETHANE (UG/KG)	240	U	250	UJ	NC	
				ISOPHORONE (UG/KG)	240	U	250	UJ	NC	
				NITROBENZENE (UG/KG)	240	U	250	UJ	NC	
				N-NITROSODIMETHYLAMINE (UG/KG)	240	U	250	UJ	NC	
				N-NITROSODI-N-PROPYLAMINE (UG/KG)	240	U	250	UJ	NC	
				N-NITROSODIPHENYLAMINE (UG/KG)	240	U	250	UJ	NC	
				PHENOL (UG/KG)	240	U	250	U	NC	
			SVOCs by SIM	2-METHYLNAPHTHALENE (UG/KG)	9.8	U	10	U	NC	
				ACENAPHTHENE (UG/KG)	9.8	U	10	U	NC	
				ACENAPHTHYLENE (UG/KG)	9.8	U	10	U	NC	
				ANTHRACENE (UG/KG)	9.8	U	10	U	NC	
				BENZO(A)ANTHRACENE (UG/KG)	9.8	U	10	U	NC	
				BENZO(A)PYRENE (UG/KG)	9.8	U	10	U	NC	
				BENZO(B)FLUORANTHENE (UG/KG)	9.8	U	10	U	NC	
				BENZO(G,H,I)PERYLENE (UG/KG)	9.8	U	10	U	NC	
				BENZO(K)FLUORANTHENE (UG/KG)	9.8	U	10	U	NC	
				CHRYSENE (UG/KG)	9.8	U	10	U	NC	

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Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	SVOCs by SIM	DIBENZ(A,H)ANTHRACENE (UG/KG)	9.8	U	10	U	NC	
				FLUORANTHENE (UG/KG)	9.8	U	10	U	NC	
				FLUORENE (UG/KG)	9.8	U	10	U	NC	
				INDENO(1,2,3-C,D)PYRENE (UG/KG)	9.8	U	10	U	NC	
				NAPHTHALENE (UG/KG)	9.8	U	10	U	NC	
				PENTACHLOROPHENOL (UG/KG)	49	U	51	U	NC	
				PHENANTHRENE (UG/KG)	9.8	U	10	U	NC	
				PYRENE (UG/KG)	9.8	U	10	U	NC	
			VOCs	1,1,1,2-TETRACHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1,1-TRICHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1,2-TRICHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1-DICHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,1-DICHLOROETHENE (UG/KG)	1.9	U	2.1	U	NC	
				1,1-DICHLOROPROPENE (UG/KG)	1.9	U	2.1	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/KG)	1.9	U	2.1	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/KG)	1.9	U	2.1	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/KG)	1.9	U	2.1	U	NC	
				1,2-DICHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				1,2-DICHLOROETHANE (UG/KG)	1.9	U	2.1	U	NC	
				1,2-DICHLOROPROPANE (UG/KG)	1.9	U	2.1	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/KG)	1.9	U	2.1	U	NC	
				1,3-DICHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				1,3-DICHLOROPROPANE (UG/KG)	1.9	U	2.1	U	NC	
				1,4-DICHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				2,2-DICHLOROPROPANE (UG/KG)	1.9	U	2.1	U	NC	
				2-CHLOROTOLUENE (UG/KG)	1.9	U	2.1	U	NC	
				2-HEXANONE (UG/KG)	9.6	U	10	U	NC	
				4-CHLOROTOLUENE (UG/KG)	1.9	U	2.1	U	NC	
				ACETONE (UG/KG)	9.6	U	10	U	NC	
				BENZENE (UG/KG)	1.9	U	2.1	U	NC	
				BROMOBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				BROMOCHLOROMETHANE (UG/KG)	1.9	U	2.1	U	NC	
				BROMODICHLOROMETHANE (UG/KG)	1.9	U	2.1	U	NC	
				BROMOFORM (UG/KG)	1.9	U	2.1	U	NC	
				BROMOMETHANE (UG/KG)	3.8	U	4.2	U	NC	

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Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	VOCs	CARBON DISULFIDE (UG/KG)	1.9	U	2.1	U	NC	
				CARBON TETRACHLORIDE (UG/KG)	1.9	U	2.1	U	NC	
				CHLOROBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				CHLOROETHANE (UG/KG)	3.8	U	4.2	U	NC	
				CHLOROFORM (UG/KG)	1.9	U	2.1	U	NC	
				CHLOROMETHANE (UG/KG)	3.8	U	4.2	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/KG)	1.9	U	2.1	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/KG)	1.9	U	2.1	U	NC	
				CYCLOHEXANE (UG/KG)	1.9	U	2.1	U	NC	
				DIBROMOCHLOROMETHANE (UG/KG)	1.9	U	2.1	U	NC	
				DIBROMOMETHANE (UG/KG)	1.9	U	2.1	U	NC	
				DICHLORODIFLUOROMETHANE (UG/KG)	3.8	U	4.2	U	NC	
				ETHYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				HEXACHLOROBUTADIENE (UG/KG)	1.9	U	2.1	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/KG)	1.9	U	2.1	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/KG)	1.9	U	2.1	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/KG)	3.8	U	4.2	U	NC	
				METHYL ACETATE (UG/KG)	2.3	U	2.5	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/KG)	9.6	U	10	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/KG)	9.6	U	10	U	NC	
				METHYLCYCLOHEXANE (UG/KG)	1.9	U	2.1	U	NC	
				METHYLENE CHLORIDE (UG/KG)	9.6	U	10	U	NC	
				NAPHTHALENE (UG/KG)	1.9	U	2.1	U	NC	
				N-BUTYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				N-PROPYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/KG)	1.9	U	2.1	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/KG)	1.9	U	2.1	U	NC	
				SEC-BUTYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				STYRENE (UG/KG)	1.9	U	2.1	U	NC	
				T-BUTYLBENZENE (UG/KG)	1.9	U	2.1	U	NC	
				TERT-BUTYL METHYL ETHER (UG/KG)	1.9	U	2.1	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/KG)	1.9	U	2.1	U	NC	
				TOLUENE (UG/KG)	1.9	U	2.1	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/KG)	1.9	U	2.1	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/KG)	1.9	U	2.1	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/KG)	1.9	U	2.1	U	NC	
				TRICHLOROFLUOROMETHANE (UG/KG)	3.8	U	4.2	U	NC	
				VINYL ACETATE (UG/KG)	1.9	U	2.1	U	NC	
				VINYL CHLORIDE (UG/KG)	3.8	U	4.2	U	NC	

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Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP4357	LORNG_SB24003_8-10_08082022_K	LORNG_SB24003_8-10_08082022FDK	WetChem	SOLIDS, PERCENT (PERCENT)	**90**		**90**		0	
				TOTAL ORGANIC CARBON (UG/G)	**690**	J	**620**		11	

Notes:
1 = Per QPP, RPD Limit 50 unless the difference between analyte concentrations is less than LOQ
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
ng/L = nanograms per liter
RPD = relative percent difference
SDG = Sample Delivery Group

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Table 5 - Acronyms and Abbreviations

Data Validation and Usability Report
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August - September 2022 Soil Sampling
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Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
WSP	WSP USA Environment & Infrastructure, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
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Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB01015_8-10_08082022	FA98012	2208181	4:2 Fluorotelomer sulfonate (4:2 FTS)	0.56	U	0.972	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	**0.3**	J	0.972	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	**0.38**	J	**0.798**	J	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.56	U	0.972	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.56	U	0.972	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.56	U	0.972	U	NC
			Perfluorobutanesulfonic acid (PFBS)	0.56	U	0.972	U	NC
			Perfluorobutanoic acid (PFBA)	0.56	U	0.972	U	NC
			Perfluorodecane sulfonate (PFDS)	0.56	U	0.972	U	NC
			Perfluorodecanoic acid (PFDA)	0.56	U	0.972	U	NC
			Perfluorododecanoic acid (PFDoA)	0.56	U	0.972	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	0.56	U	0.972	U	NC
			Perfluoroheptanoic acid (PFHpA)	0.56	U	0.972	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	**0.41**	J	0.972	U	NC
			Perfluorohexanoic acid (PFHxA)	0.56	U	0.972	U	NC
			Perfluorononanesulfonic acid (PFNS)	0.56	U	0.972	U	NC
			Perfluorononanoic acid (PFNA)	0.56	U	0.972	U	NC
			Perfluorooctane sulfonamide (PFOSA)	0.56	U	0.972	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**9.4**	J	**5.17**		58
			Perfluorooctanoic acid (PFOA)	0.56	U	0.972	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	0.56	U	0.972	U	NC
			Perfluoropentanoic acid (PFPeA)	0.56	U	0.972	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	0.56	U	0.972	U	NC
			Perfluorotridecanoic acid (PFTrDA)	0.56	U	0.972	U	NC
			Perfluoroundecanoic acid (PFUnA)	0.56	U	0.972	U	NC

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Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB01015_11.5-13.5_8822	FA98012	2208181	4:2 Fluorotelomer sulfonate (4:2 FTS)	0.54	U	0.982	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	0.54	U	**0.804**	J	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	**0.54**	J	**1.05**	J	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	0.54	U	0.982	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.54	U	0.982	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	0.54	U	0.982	U	NC
			Perfluorobutanesulfonic acid (PFBS)	0.54	U	0.982	U	NC
			Perfluorobutanoic acid (PFBA)	0.54	U	0.982	U	NC
			Perfluorodecane sulfonate (PFDS)	0.54	U	0.982	U	NC
			Perfluorodecanoic acid (PFDA)	0.54	U	0.982	U	NC
			Perfluorododecanoic acid (PFDoA)	0.54	U	0.982	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	0.54	U	0.982	U	NC
			Perfluoroheptanoic acid (PFHpA)	0.54	U	0.982	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	0.54	U	0.982	U	NC
			Perfluorohexanoic acid (PFHxA)	0.54	U	0.982	U	NC
			Perfluorononanesulfonic acid (PFNS)	0.54	U	0.982	U	NC
			Perfluorononanoic acid (PFNA)	0.54	U	0.982	U	NC
			Perfluorooctane sulfonamide (PFOSA)	0.54	U	0.982	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**6.9**		**5.7**		19
			Perfluorooctanoic acid (PFOA)	0.54	U	0.982	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	0.54	U	0.982	U	NC
			Perfluoropentanoic acid (PFPeA)	0.54	U	0.982	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	0.54	U	0.982	U	NC
			Perfluorotridecanoic acid (PFTrDA)	0.54	U	0.982	U	NC
			Perfluoroundecanoic acid (PFUnA)	0.54	U	0.982	U	NC

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Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB01026_0-1_08162022	FA98221	2208238	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.2	U	1	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.2	U	1	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.2	U	1	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	1	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	1	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.2	U	1	U	NC
			Perfluorobutanoic acid (PFBA)	1.2	U	1	U	NC
			Perfluorodecane sulfonate (PFDS)	1.2	U	1	U	NC
			Perfluorodecanoic acid (PFDA)	1.2	U	1	U	NC
			Perfluorododecanoic acid (PFDoA)	1.2	U	1	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.2	U	1	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.2	U	1	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.2	U	1	U	NC
			Perfluorohexanoic acid (PFHxA)	1.2	U	1	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.2	U	1	U	NC
			Perfluorononanoic acid (PFNA)	1.2	U	1	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.2	U	1	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**1.4**	J	**1.44**	J	NC
			Perfluorooctanoic acid (PFOA)	1.2	U	1	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.2	U	1	U	NC
			Perfluoropentanoic acid (PFPeA)	1.2	U	1	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.2	U	1	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.2	U	1	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.2	U	1	U	NC

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB20010_7-8_08162022	FA98221	2208238	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.1	U	0.987	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.1	U	0.987	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.1	U	0.987	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.1	U	0.987	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	0.987	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	0.987	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.1	U	0.987	U	NC
			Perfluorobutanoic acid (PFBA)	1.1	U	0.987	U	NC
			Perfluorodecane sulfonate (PFDS)	1.1	U	0.987	U	NC
			Perfluorodecanoic acid (PFDA)	1.1	U	0.987	U	NC
			Perfluorododecanoic acid (PFDoA)	1.1	U	0.987	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.1	U	0.987	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.1	U	0.987	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.1	U	0.987	U	NC
			Perfluorohexanoic acid (PFHxA)	1.1	U	0.987	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.1	U	0.987	U	NC
			Perfluorononanoic acid (PFNA)	1.1	U	0.987	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.1	U	0.987	U	NC
			Perfluorooctanesulfonic acid (PFOS)	1.1	U	0.987	U	NC
			Perfluorooctanoic acid (PFOA)	1.1	U	0.987	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.1	U	0.987	U	NC
			Perfluoropentanoic acid (PFPeA)	1.1	U	0.987	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.1	U	0.987	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.1	U	0.987	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.1	U	0.987	U	NC

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB12015_0-1_08182022	FA98280	2208259	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.1	U	0.967	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.1	U	**0.583**	J	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.1	U	**0.658**	J	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.1	U	0.967	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.6	UJ	0.967	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	0.967	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.1	U	0.967	U	NC
			Perfluorobutanoic acid (PFBA)	1.1	U	0.967	U	NC
			Perfluorodecane sulfonate (PFDS)	1.1	U	0.967	U	NC
			Perfluorodecanoic acid (PFDA)	1.1	U	0.967	U	NC
			Perfluorododecanoic acid (PFDoA)	1.1	U	0.967	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.1	U	0.967	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.1	U	0.967	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.1	U	0.967	U	NC
			Perfluorohexanoic acid (PFHxA)	1.1	U	0.967	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.1	U	0.967	U	NC
			Perfluorononanoic acid (PFNA)	1.1	U	0.967	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.1	U	0.967	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**3**		**2.38**		23
			Perfluorooctanoic acid (PFOA)	1.1	U	0.967	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.1	U	0.967	U	NC
			Perfluoropentanoic acid (PFPeA)	1.1	U	0.967	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.1	U	0.967	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.1	U	0.967	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.1	U	0.967	U	NC

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB12016_8-10_08182022	FA98280	2208259	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.2	U	0.981	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.2	U	0.981	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.2	U	0.981	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	0.981	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.9	UJ	0.981	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	0.981	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.2	U	0.981	U	NC
			Perfluorobutanoic acid (PFBA)	1.2	U	0.981	U	NC
			Perfluorodecane sulfonate (PFDS)	1.2	U	0.981	U	NC
			Perfluorodecanoic acid (PFDA)	1.2	U	0.981	U	NC
			Perfluorododecanoic acid (PFDoA)	1.2	U	0.981	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.2	U	0.981	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.2	U	0.981	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.2	U	0.981	U	NC
			Perfluorohexanoic acid (PFHxA)	1.2	U	0.981	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.2	U	0.981	U	NC
			Perfluorononanoic acid (PFNA)	1.2	U	0.981	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.2	U	0.981	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**0.7**	J	0.981	U	NC
			Perfluorooctanoic acid (PFOA)	1.2	U	0.981	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.2	U	0.981	U	NC
			Perfluoropentanoic acid (PFPeA)	1.2	U	0.981	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.2	U	0.981	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.2	U	0.981	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.2	U	0.981	U	NC

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August - September 2022 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB07019_0-1_08192022	FA98345	2208296	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.1	U	0.996	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.1	U	0.996	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.1	U	0.996	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.1	U	0.996	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	0.996	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	0.996	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.1	U	0.996	U	NC
			Perfluorobutanoic acid (PFBA)	1.1	U	0.996	U	NC
			Perfluorodecane sulfonate (PFDS)	1.1	U	0.996	U	NC
			Perfluorodecanoic acid (PFDA)	1.1	U	0.996	U	NC
			Perfluorododecanoic acid (PFDoA)	1.1	U	0.996	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.1	U	0.996	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.1	U	0.996	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.1	U	0.996	U	NC
			Perfluorohexanoic acid (PFHxA)	1.1	U	0.996	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.1	U	0.996	U	NC
			Perfluorononanoic acid (PFNA)	1.1	U	0.996	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.1	U	0.996	U	NC
			Perfluorooctanesulfonic acid (PFOS)	**1.3**	J	**1.53**	J	NC
			Perfluorooctanoic acid (PFOA)	1.1	U	0.996	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.1	U	0.996	U	NC
			Perfluoropentanoic acid (PFPeA)	1.1	U	0.996	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.1	U	0.996	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.1	U	0.996	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.1	U	0.996	U	NC

Notes:
No data qualifiers were applied to field sample results based on split sample comparison.
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group
ug/kg = micrograms per kilogram

Created By: ALJ 12/14/22
Checked By:

Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 LEAF Water
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Lysimeter water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August – September 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, and Katahdin Analytical Services (KAS) in Scarborough, Maine, as summarized below.

SGS analyzed 54 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this Stage 1 data validation report is presented in the following table:

- Table 1 – Summary of Samples and Analytical Methods

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). Samples included in this report were validated using Stage 1 procedures. Documentation of the Stage 1 verification and validation checks is stored in the WSP project file.

Stage 1 data validation consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics (e.g., percent moisture for soils), and analytical results with associated information. The following checks are performed as applicable to the data set:

- Documentation identifies the laboratory and samples submitted for analyses (COC and electronic data check)
- Requested analytical methods verified
- Sample preparation and analysis dates are present
- Target analyte lists verified
- Laboratory data qualifiers and data qualifier definitions provided
- Requested target analyte result units are reported
- Reporting limits/sample detection limits meet project objectives in QPP
- Results below the reporting limits are identified (J qualified)

- Sampling dates and times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory including preservation, pH and temperature are documented (COC and Sample Receipt Logs)
- Sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample collection meet project requirements in the QPP

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

2.0 STAGE 1 EVALUATION

Stage 1 verification and validation checks confirmed the overall data package compliance for this data set is interpreted to meet the project objectives identified in the QPP. A summary of Stage 1 verification and validation findings for checks that identified data package compliance issues are summarized below.

Stage 1 documentation is present in lab reports and electronic data and no compliance issues were identified.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

Data Validation: Casey Cormier

Date: March 8, 2023

Reviewed by: Julie Ricardi



March 14, 2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2022 LEAF Water
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	M537
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FA98246	LYS07007	LORG_LYS07007_8-10_080522T01	FA98246-1	8/17/2022	WI	N	25
	LYS12010	LORG_LYS12010_0-3_080422T01	FA98246-2	8/17/2022	WI	N	25
FA98247	LYS01007	LORG_LYS01007_0-3_080422T01	FA98247-1	8/17/2022	WI	N	25
		LORG_LYS01007_11-13_080422T01	FA98247-2	8/17/2022	WI	N	25
FA98248	LYS05012	LORG_LYS05012_0-3_080522T01	FA98248-1	8/17/2022	WI	N	25
	LYS07007	LORG_LYS07007_0-3_080522T01	FA98248-2	8/17/2022	WI	N	25
FA98296	LYS01007	LORG_LYS01007_0-3_080422T02	FA98296-1	8/17/2022	WI	N	25
		LORG_LYS01007_0-3_080422T03	FA98296-2	8/18/2022	WI	N	25
		LORG_LYS01007_0-3_080422T04	FA98296-3	8/18/2022	WI	N	25
		LORG_LYS01007_0-3_080422T05	FA98296-4	8/19/2022	WI	N	25
		LORG_LYS01007_11-13_080422T02	FA98296-5	8/17/2022	WI	N	25
		LORG_LYS01007_11-13_080422T03	FA98296-6	8/18/2022	WI	N	25
		LORG_LYS01007_11-13_080422T04	FA98296-7	8/18/2022	WI	N	25
		LORG_LYS01007_11-13_080422T05	FA98296-8	8/19/2022	WI	N	25
FA98297	LYS05012	LORG_LYS05012_0-3_080522T02	FA98297-1	8/17/2022	WI	N	25
		LORG_LYS05012_0-3_080522T03	FA98297-2	8/18/2022	WI	N	25
		LORG_LYS05012_0-3_080522T04	FA98297-3	8/18/2022	WI	N	25
		LORG_LYS05012_0-3_080522T05	FA98297-4	8/19/2022	WI	N	25
	LYS07007	LORG_LYS07007_0-3_080522T02	FA98297-5	8/17/2022	WI	N	25
		LORG_LYS07007_0-3_080522T03	FA98297-6	8/18/2022	WI	N	25
		LORG_LYS07007_0-3_080522T04	FA98297-7	8/18/2022	WI	N	25
		LORG_LYS07007_0-3_080522T05	FA98297-8	8/19/2022	WI	N	25
FA98302	LYS07007	LORG_LYS07007_8-10_080522T02	FA98302-1	8/17/2022	WI	N	25
		LORG_LYS07007_8-10_080522T03	FA98302-2	8/18/2022	WI	N	25
		LORG_LYS07007_8-10_080522T04	FA98302-3	8/18/2022	WI	N	25
		LORG_LYS07007_8-10_080522T05	FA98302-4	8/19/2022	WI	N	25
	LYS12010	LORG_LYS12010_0-3_080422T02	FA98302-5	8/17/2022	WI	N	25
		LORG_LYS12010_0-3_080422T03	FA98302-6	8/18/2022	WI	N	25
		LORG_LYS12010_0-3_080422T04	FA98302-7	8/18/2022	WI	N	25
		LORG_LYS12010_0-3_080422T05	FA98302-8	8/19/2022	WI	N	25
FA98338	LYS01007	LORG_LYS01007_0-3_080422T06	FA98338-1	8/21/2022	WI	N	25
		LORG_LYS01007_0-3_080422T07	FA98338-2	8/22/2022	WI	N	25
		LORG_LYS01007_11-13_080422T06	FA98338-3	8/21/2022	WI	N	25
		LORG_LYS01007_11-13_080422T07	FA98338-4	8/22/2022	WI	N	25

Prepared by:AKN
Date: 3/2/2023
Checked by: CLC
Date: 3/8/2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2022 LEAF Water
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	M537
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FA98339	LYS05012	LORG_LYS05012_0-3_080522T06	FA98339-1	8/21/2022	WI	N	25
		LORG_LYS05012_0-3_080522T07	FA98339-2	8/22/2022	WI	N	25
	LYS07007	LORG_LYS07007_0-3_080522T06	FA98339-3	8/21/2022	WI	N	25
		LORG_LYS07007_0-3_080522T07	FA98339-4	8/22/2022	WI	N	25
FA98340	LYS07007	LORG_LYS07007_8-10_080522T06	FA98340-1	8/21/2022	WI	N	25
		LORG_LYS07007_8-10_080522T07	FA98340-2	8/22/2022	WI	N	25
FA98340	LYS12010	LORG_LYS12010_0-3_080422T06	FA98340-3	8/21/2022	WI	N	25
		LORG_LYS12010_0-3_080422T07	FA98340-4	8/22/2022	WI	N	25
FA98505	LYS05012	LORG_LYS05012_0-3_080522T08	FA98505-1	8/26/2022	WI	N	25
		LORG_LYS05012_0-3_080522T09	FA98505-2	8/27/2022	WI	N	25
	LYS07007	LORG_LYS07007_0-3_080522T08	FA98505-3	8/26/2022	WI	N	25
		LORG_LYS07007_0-3_080522T09	FA98505-4	8/27/2022	WI	N	25
FA98506	LYS07007	LORG_LYS07007_8-10_080522T08	FA98506-1	8/26/2022	WI	N	25
		LORG_LYS07007_8-10_080522T09	FA98506-2	8/27/2022	WI	N	25
	LYS12010	LORG_LYS12010_0-3_080422T08	FA98506-3	8/26/2022	WI	N	25
		LORG_LYS12010_0-3_080422T09	FA98506-4	8/27/2022	WI	N	25
FA98507	LYS01007	LORG_LYS01007_0-3_080422T08	FA98507-1	8/26/2022	WI	N	25
		LORG_LYS01007_0-3_080422T09	FA98507-2	8/27/2022	WI	N	25
		LORG_LYS01007_11-13_080422T08	FA98507-3	8/26/2022	WI	N	25
		LORG_LYS01007_11-13_080422T09	FA98507-4	8/27/2022	WI	N	25

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

WG = Groundwater, WI = Lysimeter Water, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water

ParamCount = Number of target analtytes reported

Prepared by:AKN
Date: 3/2/2023
Checked by: CLC
Date: 3/8/2023

Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
Fate and Transport Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil and aqueous samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, and Katahdin Analytical Services (KAS) in Scarborough, Maine, as summarized below.

SGS analyzed 3 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 10 samples for one or more of the following methods:

- Total Organic Carbon (TOC) by Lloyd Kahn/9060A
- Percent Solids by SM2540G and ASTM D2216
- Cation-Exchange Capacity (CEC) by SW9081

Sample event information included in this Stage 1 data validation report is presented in the following table:

- Table 1 – Summary of Samples and Analytical Methods

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). Samples included in this report were validated using Stage 1 procedures. Documentation of the Stage 1 verification and validation checks is stored in the WSP project file.

Stage 1 data validation consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics (e.g., percent moisture for soils), and analytical results with associated information. The following checks are performed as applicable to the data set:

- Documentation identifies the laboratory and samples submitted for analyses (COC and electronic data check)
- Requested analytical methods verified
- Sample preparation and analysis dates are present
- Target analyte lists verified
- Laboratory data qualifiers and data qualifier definitions provided
- Requested target analyte result units are reported

- Reporting limits/sample detection limits meet project objectives in QPP
- Results below the reporting limits are identified (J qualified)
- Sampling dates and times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory including preservation, pH and temperature are documented (COC and Sample Receipt Logs)
- Sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample collection meet project requirements in the QPP

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

2.0 STAGE 1 EVALUATION

Stage 1 verification and validation checks confirmed the overall data package compliance for this data set is interpreted to meet the project objectives identified in the QPP. A summary of Stage 1 verification and validation findings for checks that identified data package compliance issues are summarized below.

Stage 1 documentation is present in lab reports and electronic data and no compliance issues were identified.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

Data Validation: Casey Cormier



March 13, 2023

Reviewed by: Julie Ricardi



March 14, 2023

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
Fate and Transport Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem		
						Analysis Method	M537	A2540G	LYDKHN	SW9081
						Fraction	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount
FA98010	LYS07007	LORNG_LYS07007_08072022GS	FA98010-1	8/7/2022	WI	N	25			
	LYS07007DDUP	LORNG_LYS07007DDUP_08082022	FA98010-2	8/8/2022	SO	N	25			
	LYS07007SDUP	LORNG_LYS07007SDUP_08082022	FA98010-3	8/8/2022	SO	N	25			
SP4276	LYS01007	LORNG_LYS01007_0-3_08042022_K	SP4276-1	8/4/2022	SO	N		1	1	1
		LORNG_LYS01007_11-13_08042022K	SP4276-2	8/4/2022	SO	N		1	1	1
	LYS12010	LORNG_LYS12010_0-3_08042022_K	SP4276-3	8/4/2022	SO	N		1	1	1
SP4278	LYS05012	LORNG_LYS05012_0-3_08052022_K	SP4278-1	8/5/2022	SO	N		1	1	1
		LORNG_LYS05012_18-20_08052022K	SP4278-2	8/5/2022	SO	N		1	1	1
		LORNG_LYS05012_8-10_08052022_K	SP4278-3	8/5/2022	SO	N		1	1	1
	LYS12010	LORNG_LYS12010_6-8_08052022_K	SP4278-4	8/5/2022	SO	N		1	1	1
SP4288	LYS07007	LORNG_LYS07007_0-3_08052022_K	SP4288-1	8/5/2022	SO	N		1	1	1
		LORNG_LYS07007_18-20_08052022K	SP4288-2	8/5/2022	SO	N		1	1	1
		LORNG_LYS07007_8-10_08052022_K	SP4288-3	8/5/2022	SO	N		1	1	1

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

WG = Groundwater, WI = Lysimeter Water, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:3/2/23
Checked by: CLC
Date: 3/13/23

Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to Enthalpy Analytical in El Dorado Hills, California, and Eurofins Pittsburgh (EET PIT) in Pittsburgh, Pennsylvania, as summarized below.

Enthalpy Analytical analyzed 132 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

EET PIT analyzed 54 samples for one or more of the following American Public Health Association Standard Methods (APHA SM), United States Environmental Protection Agency (USEPA), and/or American Society for Testing and Materials (ASTM) methods:

- Conductivity by SM 2510B
- REDOX potential by SM 2580B
- pH by EPA 9040C
- Percent Solids by ASTM D2216

Sample event information included in this Stage 1 data validation report is presented in the following table:

- Table 1 – Summary of Samples and Analytical Methods

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current USEPA guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). Samples included in this report were validated using Stage 1 procedures. Documentation of the Stage 1 verification and validation checks is stored in the WSP project file.

Stage 1 data validation consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics (e.g., percent moisture for soils), and analytical results with associated information. The following checks are performed as applicable to the data set:

- Documentation identifies the laboratory and samples submitted for analyses (COC and electronic data check)

- Requested analytical methods verified
- Sample preparation and analysis dates are present
- Target analyte lists verified
- Laboratory data qualifiers and data qualifier definitions provided
- Requested target analyte result units are reported
- Reporting limits/sample detection limits meet project objectives in QPP
- Results below the reporting limits are identified (J qualified)
- Sampling dates and times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory including preservation, pH and temperature are documented (COC and Sample Receipt Logs)
- Sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample collection meet project requirements in the QPP

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

2.0 STAGE 1 EVALUATION

Stage 1 verification and validation checks confirmed the overall data package compliance for this data set is interpreted to meet the project objectives identified in the QPP. A summary of Stage 1 verification and validation findings for checks that identified data package compliance issues are summarized below.

Stage 1 documentation is present in lab reports and electronic data and no compliance issues were identified.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

Data Validation: Amber Jones



May 24, 2023

Reviewed by: Julie Ricardi



June 9, 2023

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem			
						Analysis Method	537M	A2510B	A2580B	SW9040	D2216
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
180-142636-1	LYS01007	LORG_LYS01007_0-3_080422T01_E	180-142636-1	8/4/2022	LA	N		1	1	1	2
		LORG_LYS01007_0-3_080422T02_E	180-142636-2	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T03_E	180-142636-3	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T04_E	180-142636-4	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T05_E	180-142636-5	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T06_E	180-142636-6	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T07_E	180-142636-7	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T08_E	180-142636-8	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_0-3_080422T09_E	180-142636-9	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T01E	180-142636-10	8/4/2022	LA	N		1	1	1	2
		LORG_LYS01007_11-13_080422T02E	180-142636-11	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T03E	180-142636-12	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T04E	180-142636-13	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T05E	180-142636-14	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T06E	180-142636-15	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T07E	180-142636-16	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T08E	180-142636-17	8/4/2022	LA	N		1	1	1	
		LORG_LYS01007_11-13_080422T09E	180-142636-18	8/4/2022	LA	N		1	1	1	
180-142640-1	LYS05012	LORG_LYS05012_0-3_080522T01_E	180-142640-1	8/5/2022	LA	N		1	1	1	2
		LORG_LYS05012_0-3_080522T02_E	180-142640-2	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T03_E	180-142640-3	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T04_E	180-142640-4	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T05_E	180-142640-5	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T06_E	180-142640-6	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T07_E	180-142640-7	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T08_E	180-142640-8	8/5/2022	LA	N		1	1	1	
		LORG_LYS05012_0-3_080522T09_E	180-142640-9	8/5/2022	LA	N		1	1	1	
	LYS07007	LORG_LYS07007_0-3_080522T01_E	180-142640-10	8/5/2022	LA	N		1	1	1	2
		LORG_LYS07007_0-3_080522T02_E	180-142640-11	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T03_E	180-142640-12	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T04_E	180-142640-13	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T05_E	180-142640-14	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T06_E	180-142640-15	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T07_E	180-142640-16	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T08_E	180-142640-17	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_0-3_080522T09_E	180-142640-18	8/5/2022	LA	N		1	1	1	
180-142642-1	LYS07007	LORG_LYS07007_8-10_080522T01_E	180-142642-1	8/5/2022	LA	N		1	1	1	2
		LORG_LYS07007_8-10_080522T02_E	180-142642-2	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T03_E	180-142642-3	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T04_E	180-142642-4	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T05_E	180-142642-5	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T06_E	180-142642-6	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T07_E	180-142642-7	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T08_E	180-142642-8	8/5/2022	LA	N		1	1	1	
		LORG_LYS07007_8-10_080522T09_E	180-142642-9	8/5/2022	LA	N		1	1	1	
	LYS12010	LORG_LYS12010_0-3_080422T01_E	180-142642-10	8/4/2022	LA	N		1	1	1	2
		LORG_LYS12010_0-3_080422T02_E	180-142642-11	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T03_E	180-142642-12	8/4/2022	LA	N		1	1	1	

Prepared by:AKN
Date:5/19/2023
Checked by: ALJ
Date: 5/24/2023

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem			
						Analysis Method	537M	A2510B	A2580B	SW9040	D2216
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
180-142642-1	LYS12010	LORG_LYS12010_0-3_080422T04_E	180-142642-13	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T05_E	180-142642-14	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T06_E	180-142642-15	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T07_E	180-142642-16	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T08_E	180-142642-17	8/4/2022	LA	N		1	1	1	
		LORG_LYS12010_0-3_080422T09_E	180-142642-18	8/4/2022	LA	N		1	1	1	
2208376	LYS05012	LORNG_LYS05012_18-20_C100ng/L	2208376-11	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C10Kng/L	2208376-15	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C10ng/L	2208376-09	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C1Kng/L	2208376-13	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C20Kng/L	2208376-16	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C500ng/L	2208376-12	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C50ng/L	2208376-10	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_C5Kng/L	2208376-14	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_R0.04	2208376-01	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_R0.2	2208376-02	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_R0.5	2208376-03	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_T24hrs	2208376-05	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_T48hrs	2208376-06	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_T72hrs	2208376-07	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_T8hrs	2208376-04	8/5/2022	SO	N	25				
		LORNG_LYS05012_18-20_T96hrs	2208376-08	8/5/2022	SO	N	25				
	SOURCEWATER	LORNG_SourceWater_C100ng/L	2208376-27	8/29/2022	WH	N	25				
		LORNG_SourceWater_C10Kng/L	2208376-31	8/29/2022	WH	N	25				
		LORNG_SourceWater_C10ng/L	2208376-25	8/29/2022	WH	N	25				
		LORNG_SourceWater_C1Kng/L	2208376-29	8/29/2022	WH	N	25				
		LORNG_SourceWater_C20Kng/L	2208376-32	8/29/2022	WH	N	25				
		LORNG_SourceWater_C500ng/L	2208376-28	8/29/2022	WH	N	25				
		LORNG_SourceWater_C50ng/L	2208376-26	8/29/2022	WH	N	25				
		LORNG_SourceWater_C5Kng/L	2208376-30	8/29/2022	WH	N	25				
		Ratio-0.04 (Reagent)	2208376-17	8/9/2022	WH	N	25				
		Ratio-0.2 (Reagent)	2208376-18	8/9/2022	WH	N	25				
		Ratio-0.5 (Reagent)	2208376-19	8/9/2022	WH	N	25				
		Time24 hrs (Reagent)	2208376-21	8/9/2022	WH	N	25				
		Time-48 hrs (Reagent)	2208376-22	8/9/2022	WH	N	25				
		Time-72 hrs (Reagent)	2208376-23	8/9/2022	WH	N	25				
		Time-8 hrs (Reagent)	2208376-20	8/9/2022	WH	N	25				
		Time-96 hrs (Reagent)	2208376-24	8/9/2022	WH	N	25				
2208377	LYS07007	LORNG_LYS07007_18-20_C100ng/L	2208377-11	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C10Kng/L	2208377-15	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C10ng/L	2208377-09	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C1Kng/L	2208377-13	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C20Kng/L	2208377-16	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C500ng/L	2208377-12	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C50ng/L	2208377-10	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_C5Kng/L	2208377-14	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_R0.04	2208377-01	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_R0.2	2208377-02	8/5/2022	SO	N	25				

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem			
						Analysis Method	537M	A2510B	A2580B	SW9040	D2216
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
2208377	LYS07007	LORNG_LYS07007_18-20_R0.5	2208377-03	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_T24hrs	2208377-05	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_T48hrs	2208377-06	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_T72hrs	2208377-07	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_T8hrs	2208377-04	8/5/2022	SO	N	25				
		LORNG_LYS07007_18-20_T96hrs	2208377-08	8/5/2022	SO	N	25				
	SOURCEWATER	Ratio-0.04 (Reagent)_2208377	2208377-17	8/9/2022	WH	N	25				
		Ratio-0.2 (Reagent)_2208377	2208377-18	8/9/2022	WH	N	25				
		Ratio-0.5 (Reagent)_2208377	2208377-19	8/9/2022	WH	N	25				
		SourceWater_C100ng/L_2208377	2208377-27	8/29/2022	WH	N	25				
		SourceWater_C10Kng/L_2208377	2208377-31	8/29/2022	WH	N	25				
		SourceWater_C10ng/L_2208377	2208377-25	8/29/2022	WH	N	25				
		SourceWater_C1Kng/L_2208377	2208377-29	8/29/2022	WH	N	25				
		SourceWater_C20Kng/L_2208377	2208377-32	8/29/2022	WH	N	25				
		SourceWater_C500ng/L_2208377	2208377-28	8/29/2022	WH	N	25				
		SourceWater_C50ng/L_2208377	2208377-26	8/29/2022	WH	N	25				
		SourceWater_C5Kng/L_2208377	2208377-30	8/29/2022	WH	N	25				
		Time-24hrs (Reagent)_2208377	2208377-21	8/9/2022	WH	N	25				
		Time-48hrs (Reagent)_2208377	2208377-22	8/9/2022	WH	N	25				
		Time-72hrs (Reagent)_2208377	2208377-23	8/9/2022	WH	N	25				
		Time-8hrs (Reagent)_2208377	2208377-20	8/9/2022	WH	N	25				
		Time-96hrs (Reagent)_2208377	2208377-24	8/9/2022	WH	N	25				
2208378	LYS12010	LORNG_LYS12010_11-12_C100ng/L	2208378-11	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C10Kng/L	2208378-15	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C10ng/L	2208378-09	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C1Kng/L	2208378-13	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C20Kng/L	2208378-16	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C500ng/L	2208378-12	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C50ng/L	2208378-10	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_C5Kng/L	2208378-14	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_R0.04	2208378-01	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_R0.2	2208378-02	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_R0.5	2208378-03	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_T24hrs	2208378-05	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_T48hrs	2208378-06	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_T72hrs	2208378-07	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_T8hrs	2208378-04	8/4/2022	SO	N	25				
		LORNG_LYS12010_11-12_T96hrs	2208378-08	8/4/2022	SO	N	25				
	SOURCEWATER	Ratio-0.04 (Reagent)_2208378	2208378-17	8/9/2022	WH	N	25				
		Ratio-0.2 (Reagent)_2208378	2208378-18	8/9/2022	WH	N	25				
		Ratio-0.5 (Reagent)_2208378	2208378-19	8/9/2022	WH	N	25				
		SourceWater_C100ng/L_2208378	2208378-27	8/29/2022	WH	N	25				
		SourceWater_C10Kng/L_2208378	2208378-31	8/29/2022	WH	N	25				
		SourceWater_C10ng/L_2208378	2208378-25	8/29/2022	WH	N	25				
		SourceWater_C1Kng/L_2208378	2208378-29	8/29/2022	WH	N	25				
		SourceWater_C20Kng/L_2208378	2208378-32	8/29/2022	WH	N	25				
		SourceWater_C500ng/L_2208378	2208378-28	8/29/2022	WH	N	25				
		SourceWater_C50ng/L_2208378	2208378-26	8/29/2022	WH	N	25				

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
August 2022 Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem			
						Analysis Method	537M	A2510B	A2580B	SW9040	D2216
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
2208378	SOURCEWATER	SourceWater_C5Kng/L_2208378	2208378-30	8/29/2022	WH	N	25				
		Time-24hrs (Reagent)_2208378	2208378-21	8/9/2022	WH	N	25				
		Time-48hrs (Reagent)_2208378	2208378-22	8/9/2022	WH	N	25				
		Time-72hrs (Reagent)_2208378	2208378-23	8/9/2022	WH	N	25				
		Time-8hrs (Reagent)_2208378	2208378-20	8/9/2022	WH	N	25				
		Time-96hrs (Reagent)_2208378	2208378-24	8/9/2022	WH	N	25				
2208379	OW12002	LORNG_OW12002_16-17_C100ng/L	2208379-11	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C10Kng/L	2208379-15	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C10ng/L	2208379-09	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C1Kng/L	2208379-13	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C20Kng/L	2208379-16	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C500ng/L	2208379-12	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C50ng/L	2208379-10	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_C5Kng/L	2208379-14	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_R0.04	2208379-01	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_R0.2	2208379-02	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_R0.5	2208379-03	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_T24hrs	2208379-05	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_T48hrs	2208379-06	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_T72hrs	2208379-07	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_T8hrs	2208379-04	8/22/2022	SO	N	25				
		LORNG_OW12002_16-17_T96hrs	2208379-08	8/22/2022	SO	N	25				
	SOURCEWATER	Ratio-0.04 (Reagent)_2208379	2208379-17	8/23/2022	WH	N	25				
		Ratio-0.2 (Reagent)_2208379	2208379-18	8/23/2022	WH	N	25				
		Ratio-0.5 (Reagent)_2208379	2208379-19	8/23/2022	WH	N	25				
		SourceWater_C100ng/L_2208379	2208379-27	8/29/2022	WH	N	25				
		SourceWater_C10Kng/L_2208379	2208379-31	8/29/2022	WH	N	25				
		SourceWater_C10ng/L_2208379	2208379-25	8/29/2022	WH	N	25				
		SourceWater_C1Kng/L_2208379	2208379-29	8/29/2022	WH	N	25				
		SourceWater_C20Kng/L_2208379	2208379-32	8/29/2022	WH	N	25				
		SourceWater_C500ng/L_2208379	2208379-28	8/29/2022	WH	N	25				
		SourceWater_C50ng/L_2208379	2208379-26	8/29/2022	WH	N	25				
		SourceWater_C5Kng/L_2208379	2208379-30	8/29/2022	WH	N	25				
		Time-24hrs (Reagent)_2208379	2208379-21	8/23/2022	WH	N	25				
		Time-48hrs (Reagent)_2208379	2208379-22	8/23/2022	WH	N	25				
		Time-8hrs (Reagent)_2208379	2208379-20	8/23/2022	WH	N	25				
		Time-96hrs (Reagent)_2208379	2208379-24	8/23/2022	WH	N	25				
		TTime-72hrs (Reagent)_2208379	2208379-23	8/23/2022	WH	N	25				
2211048	LYS05012	LORNG_LYS05012_18-20_08052022	2211048-01	8/5/2022	SO	N	25				
	LYS07007	LORNG_LYS07007_18-20_08052022	2211048-02	8/5/2022	SO	N	25				
	LYS12010	LORNG_LYS12010_11-12_08042022	2211048-03	8/4/2022	SO	N	25				
	OW12002	LORNG_OW12002_16-17_08222022	2211048-04	8/22/2022	SO	N	25				

Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
Fate and Transport Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil and aqueous samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, and Katahdin Analytical Services (KAS) in Scarborough, Maine, as summarized below.

SGS analyzed 3 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 10 samples for one or more of the following methods:

- Total Organic Carbon (TOC) by Lloyd Kahn/9060A
- Percent Solids by SM2540G and ASTM D2216
- Cation-Exchange Capacity (CEC) by SW9081

Sample event information included in this Stage 1 data validation report is presented in the following table:

- Table 1 – Summary of Samples and Analytical Methods

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). Samples included in this report were validated using Stage 1 procedures. Documentation of the Stage 1 verification and validation checks is stored in the WSP project file.

Stage 1 data validation consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics (e.g., percent moisture for soils), and analytical results with associated information. The following checks are performed as applicable to the data set:

- Documentation identifies the laboratory and samples submitted for analyses (COC and electronic data check)
- Requested analytical methods verified
- Sample preparation and analysis dates are present
- Target analyte lists verified
- Laboratory data qualifiers and data qualifier definitions provided
- Requested target analyte result units are reported

- Reporting limits/sample detection limits meet project objectives in QPP
- Results below the reporting limits are identified (J qualified)
- Sampling dates and times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory including preservation, pH and temperature are documented (COC and Sample Receipt Logs)
- Sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample collection meet project requirements in the QPP

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

2.0 STAGE 1 EVALUATION

Stage 1 verification and validation checks confirmed the overall data package compliance for this data set is interpreted to meet the project objectives identified in the QPP. A summary of Stage 1 verification and validation findings for checks that identified data package compliance issues are summarized below.

Stage 1 documentation is present in lab reports and electronic data and no compliance issues were identified.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

Data Validation: Casey Cormier



March 13, 2023

Reviewed by: Julie Ricardi



March 14, 2023

Table 1 - Summary of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
Fate and Transport Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem		
						Analysis Method	M537	A2540G	LYDKHN	SW9081
						Fraction	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount
FA98010	LYS07007	LORNG_LYS07007_08072022GS	FA98010-1	8/7/2022	WI	N	25			
	LYS07007DDUP	LORNG_LYS07007DDUP_08082022	FA98010-2	8/8/2022	SO	N	25			
	LYS07007SDUP	LORNG_LYS07007SDUP_08082022	FA98010-3	8/8/2022	SO	N	25			
SP4276	LYS01007	LORNG_LYS01007_0-3_08042022_K	SP4276-1	8/4/2022	SO	N		1	1	1
		LORNG_LYS01007_11-13_08042022K	SP4276-2	8/4/2022	SO	N		1	1	1
	LYS12010	LORNG_LYS12010_0-3_08042022_K	SP4276-3	8/4/2022	SO	N		1	1	1
SP4278	LYS05012	LORNG_LYS05012_0-3_08052022_K	SP4278-1	8/5/2022	SO	N		1	1	1
		LORNG_LYS05012_18-20_08052022K	SP4278-2	8/5/2022	SO	N		1	1	1
		LORNG_LYS05012_8-10_08052022_K	SP4278-3	8/5/2022	SO	N		1	1	1
	LYS12010	LORNG_LYS12010_6-8_08052022_K	SP4278-4	8/5/2022	SO	N		1	1	1
SP4288	LYS07007	LORNG_LYS07007_0-3_08052022_K	SP4288-1	8/5/2022	SO	N		1	1	1
		LORNG_LYS07007_18-20_08052022K	SP4288-2	8/5/2022	SO	N		1	1	1
		LORNG_LYS07007_8-10_08052022_K	SP4288-3	8/5/2022	SO	N		1	1	1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WI = Lysimeter Water, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analtytes reported

Prepared by:AKN
Date:3/2/23
Checked by: CLC
Date: 3/13/23

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

One groundwater and one source water sample were collected at the Former Loring Air Force Base in Limestone, Maine, in February 2022. Per- and polyfluoroalkyl substances (PFAS) samples were submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista).

Vista analyzed 2 samples for per- and polyfluoroalkyl substances (PFAS) by liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD,2019a).

Results were reported in the following Sample Delivery Groups (SDGs):

- 2202134

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) for Remedial Investigation at Former Loring Air Force Base (Wood, 2021). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

RIS = Extracted internal standard outside control limit

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

The reporting limit for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in samples LORNG-ANWR01-02102022 and LORNG-Sourcewater-02102022 and perfluorobutanoic acid (PFBA) in sample LORNG-Sourcewater-02102022 are considered estimated based on extracted internal standard (EIS) recoveries outside of the QC acceptance criteria. No impact on data usability was identified.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Extracted Internal Standard Recovery

The EIS percent recoveries associated with N-MeFOSA and PFBA were less than the lower QC acceptance limit of 50. The reporting limit for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in samples LORNG-ANWR01-02102022 and LORNG-Sourcewater-02102022 and perfluorobutanoic acid (PFBA) in sample LORNG-Sourcewater-02102022 were qualified as estimated (UJ).

Reference:

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

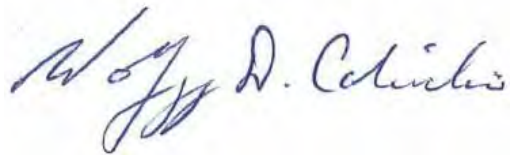
USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November 2018.

Data Validation: Amber Jones



March 10, 2022

Reviewed by: Wolfgang D. Calicchio



March 21, 2022

Table 1

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	MS014.0
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
2202134	ANWR01	LORNG-ANWR01-02102022	2202134-01	2/10/2022	WP	N	25
	SOURCEWATER	LORNG-Sourcewater-02102022	2202134-02	2/10/2022	WH	N	25

Notes:

[1] = Analysis Method is LC/MS/MS compliant with Table B-15 of the DoD QSM, version 5.3.

LC/MS/MS = Liquid Chromatography Tandem Mass Spectrometry

T = Total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water;

WH = Equipment Wash Water

ParamCount = Number of target analytes reported

PFAS = Per- and Polyfluoroalkyl Substance

All samples were subjected to Stage 2B Data Validation; shaded samples were subjected to Stage 4 Data Validation.

Prepared by:AKN
Date:3/9/22
Checked by: ALJ
Date: 3/10/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	2202134			
			Location	ANWR01		SOURCEWATER	
			Sample Date	2/10/2022		2/10/2022	
			Sample ID	LORNG-ANWR01-02102022		LORNG-Sourcewater-02102022	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2.07	U	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.07	U	2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2.07	U	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2.07	U	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2.07	UJ	2	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2.07	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.07	U	2	U
		Perfluorobutanoic acid (PFBA)	NG/L	2.07	U	2	UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	2.07	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.07	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.07	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.07	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.07	U	2	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.31		2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2.07	U	2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.07	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	2.07	U	2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	15		25	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4.42		1.06	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.07	J	1.68	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.07	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.07	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.07	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.07	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.07	U	2	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

AB = Ambient Blank; EB = Equipment Blank

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 3/9/22
Checked by: ALJ
Date: 3/10/22

Table 3 - Summary of Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
2202134	MS014.0	T	2202134-01	LORNG-ANWR01-02102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2.07	U	2.07	UJ	RIS	NG/L
			2202134-02	LORNG-Sourcewater-02102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	2	U	2	UJ	RIS	NG/L

Notes:

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

RIS = Extracted internal standard outside of acceptance limits

Prepared by:AKN
Date:3/9/22
Checked by: ALJ
Date: 3/10/22

Table 4 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Groundwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, in July - August 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 82 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 9 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Methods 8011 and 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polynuclear Aromatic Hydrocarbons (PAHs) and Select SVOCs by SW846 Methods 8270C Selected Ion Monitoring (SIM) and 8270D SIM
- Metals by SW846 Methods 6010C, 6020A, and 7470A

Duplicates of groundwater samples LORNG_BW16002_08072022 and LORNG_OW17002_08162022 were collected and submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as interlaboratory comparison assessment samples. Vista analyzed two samples for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS

data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the PFAS and other chemistry data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CBL = Continuing calibration blank concentration less than the reporting limit

CCL = Continuing calibration standard recovery less than lower control limit
HHL = Holding time exceeded
IAG = Ion abundance ratio outside calculated limits
ICD = Initial calibration relative standard deviation limit exceeded
LBL = Laboratory blank contamination less than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCL = LCS recovery less than lower control limit
LCH = LCS recovery greater than upper control limit
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
RFL = Signal to noise ratio criteria exceeded
RIS = Extracted internal standard recovery outside control limits
SGL = Surrogate recovery less than lower control limit
SVLL = Second source verification standard recovery less than lower control limit
TBL = Trip blank concentration less than the reporting limit

Interlaboratory split samples LORNG_BW16002_08072022SPLIT and LORNG_OW17002_08162022SPLIT were submitted to Vista as an additional quality assurance step. Data validation was not planned for Vista data unless gross deviations were observed. No gross deviations were observed. Results are presented in this report to complete the interlaboratory comparison only and are not included in the final data set of the Loring RI sampling program and not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6. An evaluation of split sample results is presented in Section 2.1.6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS

Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_BW07001_08022022
LORNG_BW08003_08032022
LORNG_OW07001_08022022
LORNG_BW01006_08032022FD
LORNG_BW01009_08032022
LORNG_BW02001_08032022
LORNG_OW01002_08032022
LORNG_OW05004_08052022FD
LORNG_OW02002_08042022

LORNG_BB_BW001_08072022
LORNG_BW01008_08062022
LORNG_BW05008_08062022
LORNG_BW05009_08062022
LORNG_BW18007_08062022
LORNG_BW06008_08172022
LORNG_GC_BW001_08182022
LORNG_BW13003_08192022

Non-detect results for N-MeFOSA in samples LORNG_BW07001_08022022 and LORNG_BW08003_08032022 were qualified as rejected (R) based on an LCS percent recovery of 0. Results for N-MeFOSA in these samples are considered unusable for project objectives.

PFAS detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for MS/MSD recovery, EIS recovery, continuing calibration percent difference, quantitation ion signal to noise ratio, and/or transition ion ratio. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for EIS recovery and/or MS/MSD percent recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

The split samples analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets. Split sample results are presented in Table 6 and discussed in Section 2.1.6.

Of the 2,100 individual PFAS results reported for the groundwater event, a total of 17 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a PFAS data completeness of 99.2% for the groundwater data set.

VOCs

A low concentration detection of chloromethane in the sample LORNG_OW08002_08022022_K was qualified non-detect (U) at the LOD based on contamination in the associated trip blank. No impact on data usability was identified.

Reporting limits for VOCs were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for holding time. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be

considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 366 individual VOC results (Methods 8260C and 8011) reported for the groundwater event, 0 results were qualified as rejected. This represents a VOC data completeness of 100% for the groundwater event.

SVOCs

The non-detect results for hexachlorobutadiene in sample LORNG_OW08002_08022022_K and 2,3,4,6-tetrachlorophenol in sample LORNG_OW07003_08232022_K were rejected (R) based on LCS/LCSD percent recovery less than 10. Results for hexachlorobutadiene in sample LORNG_OW08002_08022022_K and 2,3,4,6-tetrachlorophenol in sample LORNG_OW07003_08232022_K are considered unusable for project objectives.

Reporting limits for SVOCs were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery, LCS/LCSD RPD, surrogate recovery, initial calibration percent recovery, instrument calibration check standard recovery,. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

The benzyl alcohol result in sample LORNG_OW08002_08022022_K was qualified estimated (J) based on associated QC results exceeding limits for LCS/LCSD percent recovery and relative percent difference. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 112 individual SVOC results (Method 8270D) reported for the groundwater event, a total of 2 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents an SVOC data completeness of 98.2% for the groundwater data set.

PAHs and Select SVOCs by SIM

Reporting limits for indeno(1,2,3-cd)pyrene and pentachlorophenol were qualified estimated (UJ) in sample LORNG_OW08002_08022022_K based on associated QC results exceeding limits for initial calibration percent recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 38 individual PAH and select SVOCs by SIM results (Methods 8270C SIM and 8270D SIM) reported for the groundwater event, 0 results were qualified as rejected. This represents a PAH and select SVOCs by SIM data completeness of 100% for the groundwater event.

Metals

Low concentration detections of total chromium, mercury, and thallium in sample LORNG_OW08002_08022022 and cadmium in sample LORNG_OW07003_08232022 were qualified not detected (U) at the LOD based on contamination in the associated laboratory method blanks or instrument calibration blanks. The LOD for chromium is less than the PAL and results forchromium are considered usable for project objectives. LODs for mercury in sample LORNG_OW08002_08022022 and cadmium in sample LORNG_OW07003_08232022 are greater than associated project action limits (PALs). Although the LODS for a subset of target analytes are greater than associated PALs, MDLs are less than the PALs and results are interpreted to be usable for project objectives. The LODs and MDLs for arsenic and thallium are greater than the PALs. The potential data gaps that may occur from using non-detect results for arsenic and thallium, as well as mercury in sample LORNG_OW08002_08022022 and cadmium in sample LORNG_OW07003_08232022, should be considered during contamination assessment.

Of the 50 individual total and dissolved metals results (Methods 6010C, 6020A, and 7470A) reported for the groundwater event, no results were qualified as rejected. This represents a metals data completeness of 100% for the groundwater event.

Laboratory reporting limits (RLs) and/or MDLs for all samples in the groundwater event are less than the Project Action Limits (PALs) identified in the QAPP with the following exception:

- Reporting limits for a subset of VOCs, SVOCs, and metals as reported by the laboratory do not meet the PALs.

Of the overall 2,641 individual results reported for the groundwater event, 19 results were qualified as rejected. This represents an overall data completeness of 99.3% for the groundwater event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times

* QC Blanks
* Instrument Performance/Tuning
  LCS
  MS/MSD
* Field/Lab Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 LCS

Non-detect results for N-MeFOSA in samples LORNG_BW07001_08022022 and LORNG_BW08003_08032022 were qualified as rejected (R) based on an LCS percent recovery of 0.

2.1.2 MS/MSD

The perfluorohexanoic acid (PFHxA) result in sample LORNG_BW07003_0722022 was qualified as estimated (J) based on MS/MSD percent recoveries greater than DoD limits.

The reporting limit for perfluorotetradecanoic acid (PFTeDA) in sample LORNG_BW03002_08052022 was qualified as estimated (UJ) based on an MSD percent recovery less than DoD limits.

2.1.3 Extracted Internal Standard Recovery

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20:

LORNG_BW08003_08032022
LORNG_OW07001_08022022
LORNG_BW01006_08032022FD
LORNG_BW01009_08032022
LORNG_BW02001_08032022
LORNG_OW01002_08032022
LORNG_OW05004_08052022FD
LORNG_OW02002_08042022
LORNG_BB_BW001_08072022
LORNG_BW01008_08062022
LORNG_BW05008_08062022

LORNG_BW05009_08062022
LORNG_BW18007_08062022
LORNG_BW06008_08172022
LORNG_GC_BW001_08182022
LORNG_BW13003_08192022

The reporting limit for N-MeFOSA in sample LORNG_BW07001_08022022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50, and the non-detect result for N-MeFOSA in this sample was subsequently qualified rejected (R) based on an LCS percent recovery of 0.

Reporting limits for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_BW07002_07262022
LORNG_OW07002_07262022
LORNG_BW09001_08032022
LORNG_OW08001_08022022FD
LORNG_OW09001_08022022
LORNG_OW20006_08022022
LORNG_BW20002_08032022
LORNG_OW01004_08042022
LORNG_OW20007_08032022
LORNG_OW05004_08052022
LORNG_BW02002_08042022
LORNG_BW03001_08052022
LORNG_BW20001_08042022
LORNG_OW05002_08042022
LORNG_OW05003_08052022
LORNG_OW20001_08042022
LORNG_OW20002_08042022
LORNG_BB_OW001_08072022
LORNG_BW05010_08062022
LORNG_BW16002_08072022
LORNG_BW18007_08062022FD
LORNG_EBGB_BW002_08052022
LORNG_OW20003_08072022
LORNG_BB_OW002_08092022
LORNG_BB_OW002_08092022FD
LORNG_BW13001_08092022
LORNG_EBGB_BW001_08092022
LORNG_BB_BW002_08092022
LORNG_BW10008_08092022
LORNG_BW18006_08082022
LORNG_BW18008_08082022
LORNG_BW18009_08082022

LORNG_BW18010_08082022
LORNG_OW16002_08162022
LORNG_OW20004_08182022
LORNG_OW20005_08182022
LORNG_BW13002_08192022

Reporting limits for 4:2 fluorotelomer sulfonate (4:2 FTS), 6:2 fluorotelomer sulfonate (6:2 FTS), and 8:2 fluorotelomer sulfonate (8:2 FTS) in sample LORNG_BW18007_08062022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) and N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) in samples LORNG_BW01008_08062022, LORNG_BW05009_08062022, and LORNG_BW18007_08062022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The reporting limit for perfluorobutanesulfonic acid (PFBS) in sample LORNG_BW18007_08062022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

Reporting limits for perfluorobutanoic acid (PFBA) in samples LORNG_BW05008_08062022, LORNG_BW18007_08062022, and LORNG_OW20003_08072022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Results for PFBA in samples LORNG_BW10007_08082022 and LORNG_OW23001_08172022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

Reporting limits for perfluorodecane sulfonate (PFDS) in samples LORNG_BW05009_08062022 and LORNG_BW18007_08062022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The reporting limit for perfluorodecanoic acid (PFDA) in sample LORNG_BW18007_08062022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

Reporting limits for perfluorododecanoic acid (PFDoA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_BW08003_08032022
LORNG_BW03001_08052022
LORNG_BW05009_08062022
LORNG_BW18007_08062022
LORNG_GC_BW001_08182022

Reporting limits for subset of PFAS analytes in sample LORNG_BW18007_08062022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for perfluorooctane sulfonamide (PFOSA) in samples LORNG_BW01008_08062022, LORNG_BW05008_08062022, and LORNG_BW18007_08062022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Results for PFOSA in samples LORNG_BW01009_08032022 and LORNG_BW05009_08062022 were qualified as estimated (J) based on EIS percent recoveries less than 50.

Reporting limits for PFTeDA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_BW08003_08032022
LORNG_BW03001_08052022
LORNG_BW01008_08062022
LORNG_BW05009_08062022
LORNG_BW05010_08062022
LORNG_BW18007_08062022
LORNG_BW13002_08192022FD
LORNG_GC_BW001_08182022

Reporting limits for perfluorotridecanoic acid (PFTrDA) in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_BW08003_08032022
LORNG_BW03001_08052022
LORNG_BW05009_08062022
LORNG_BW18007_08062022
LORNG_GC_BW001_08182022

Reporting limits for perfluoroundecanoic acid (PFUnA) in samples LORNG_BW05009_08062022, LORNG_BW18007_08062022, and LORNG_GC_BW001_08182022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

2.1.4 Continuing Calibration

The result for perfluorooctanesulfonic acid (PFOS) in sample LORNG_OW20003_08072022 was qualified as estimated (J) due to one or more associated continuing calibration verification standards reporting a percent difference outside of DoD limits.

2.1.5 Miscellaneous

The transition ion ratios for PFOSA and perfluorononanesulfonic acid (PFNS) in sample LORNG_OW07001_08022022 were outside the acceptable ion ratio range calculated from the associated daily calibration standard. The PFOSA and PFNS result in sample LORNG_OW07001_08022022 was qualified estimated (J).

The results for PFBS and PFOS in sample LORNG_OW16002_08162022 were qualified as estimated (J) based on signal to noise ratios less than 10 for the quantitation ions.

2.1.6 Interlaboratory Split Samples

Interlaboratory split samples were collected in association with the following groundwater samples:

LORNG_BW16002_08072022
LORNG_OW17002_08162022

A summary of split sample results is presented on Table 6. Comparison criteria are established in QPP Appendix E. The majority of PFAS target compounds were not detected in either sample. PFAS compounds that were detected showed general agreement between results reported by SGS and Vista. No data qualifiers were required as a result of the split sample evaluation, and results for the split samples analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets.

2.2 VOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
  Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.2.1 Holding Times

Reporting limits for 1,2-dibromo-3-chloropropane and 1,2-dibromoethane in sample LORNG_OW07003_08232022_K was qualified as estimated (UJ) due to analysis time exceeding method limits.

2.2.2 QC Blanks

Chloromethane was detected in the trip blank LORNG_TB09_08022022 (0.72 ug/L) associated with sample LORNG_OW08002_08022022_K. The detection of chloromethane in sample LORNG_OW08002_08022022_K was reported below the LOQ, and the result was qualified as not-detected (U) at the LOD.

2.2.3 Reporting Limits

Reporting limits for a subset of VOCs as reported by the laboratory do not meet the PALs identified in the QPP.

2.3 SVOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
  LCS
* MS/MSD
* Field Duplicates
  Surrogate
  Reporting Limits
* Electronic Data Verification
  Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.3.1 Laboratory Control Sample

Non-detect results for hexachlorocyclopentadiene in sample LORNG_OW08002_08022022_K and 2,3,4,6-tetrachlorophenol in sample LORNG_OW07003_08232022_K were qualified as rejected (R) based on LCS/LCSD percent recoveries less than 10 and LCS/LCSD relative percent differences greater than DoD limits.

Reporting limits for a subset of analytes in sample LORNG_OW08002_08022022_K were qualified as estimated (UJ) based on LCS and/or LCSD precent recoveries less than DoD limits and LCS/LCSD relative percent differences greater than DoD limits.

The result for benzyl alcohol in sample LORNG_OW08002_08022022_K was qualified as estimated (J) based on LCS and/or LCSD percent recoveries and LCS/LCSD relative percent differences greater than DoD limits.

2.3.2 Surrogate

Reporting limits for all acid-fraction SVOC analytes in sample LORNG_OW07003_08232022_k were qualified as estimated (UJ) based on surrogate percent recoveries less than DoD limits.

2.3.3 Reporting Limits

Reporting limits for a subset of SVOCs as reported by the laboratory do not meet the PALs identified in the QPP.

2.3.4 Initial Calibration

The reporting limit for 4-nitrophenol in sample LORNG_OW08002_08022022_K was qualified as estimated (UJ) based on an initial calibration relative standard deviation outside of DoD limits.

2.3.5 Continuing Calibration

Reporting limits for a subset of analytes in sample LORNG_OW08002_0802022_K were qualified as estimated (UJ) based on a second source verification percent recovery outside of DoD limits.

2.4 PAHs and Select SVOCs by SIM

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
  Initial Calibration
* Continuing Calibration

* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.4.1 Initial Calibration

Reporting limits for indeno(1,2,3-cd)pyrene and pentachlorophenol in sample LORNG_OW08002_08022022_K were qualified as estimated (UJ) based on initial calibration relative standard deviations outside of DoD limits.

2.5 Metals

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
  Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Total/Dissolved Solids
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.5.1 QC Blanks

Low concentration detections of total mercury and cadmium in samples LORNG_OW08002_08022022_K and LORNG_OW07003_08232022_K were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated laboratory method blanks.

Low concentration detections of total thallium and chromium in sample LORNG_OW08002_08022022_K were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated instrument calibration blanks.

2.5.2 Reporting Limits

Reporting limits for a subset of metals as reported by the laboratory do not meet the PALs identified in the QPP.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



December 12, 2022

Reviewed by: Julie Ricardi



January 15, 2023

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS		VOCs		SVOCs by SIM	SVOCs	Metals				
					Analysis Method		M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	SW6010C	SW6020	SW6020A	SW7470A	
					Fraction		T	T	T	T	T	T	T	T	T	T	
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
2208238	OW17002	LORNG_OW17002_08162022SPLIT	2208238-01	8/16/2022	WG	N		25									
2208180	BW16002	LORNG_BW16002_08072022SPLIT	2208180-01	8/7/2022	WG	N		25									
FA97652	BW07002	LORNG_BW07002_07262022	FA97652-1	7/26/2022	WG	N	25										
	BW07003	LORNG_BW07003_07262022	FA97652-2	7/26/2022	WG	N	25										
	OW07002	LORNG_OW07002_07262022	FA97652-3	7/26/2022	WG	N	25										
FA97845	BW07001	LORNG_BW07001_08022022	FA97845-1	8/2/2022	WG	N	25										
	BW08003	LORNG_BW08003_08032022	FA97845-2	8/3/2022	WG	N	25										
	BW09001	LORNG_BW09001_08032022	FA97845-3	8/3/2022	WG	N	25										
	OW01003	LORNG_OW01003_08032022	FA97845-4	8/3/2022	WG	N	25										
	OW07001	LORNG_OW07001_08022022	FA97845-5	8/2/2022	WG	N	25										
	OW08001	LORNG_OW08001_08022022	FA97845-6	8/2/2022	WG	N	25										
		LORNG_OW08001_08022022FD	FA97845-7	8/2/2022	WG	FD	25										
	OW08002	LORNG_OW08002_08022022	FA97845-8	8/2/2022	WG	N	25										
	OW09001	LORNG_OW09001_08022022	FA97845-9	8/2/2022	WG	N	25										
	OW20006	LORNG_OW20006_08022022	FA97845-10	8/2/2022	WG	N	25										
FA97889	BW01006	LORNG_BW01006_08032022	FA97889-1	8/3/2022	WG	N	25										
		LORNG_BW01006_08032022FD	FA97889-2	8/3/2022	WG	FD	25										
	BW01009	LORNG_BW01009_08032022	FA97889-3	8/3/2022	WG	N	25										
	BW02001	LORNG_BW02001_08032022	FA97889-4	8/3/2022	WG	N	25										
	BW20002	LORNG_BW20002_08032022	FA97889-5	8/3/2022	WG	N	25										
	FIELDQC	LORNG_EB023_08032022	FA97889-6	8/3/2022	WQ	EB	25										
	OW01002	LORNG_OW01002_08032022	FA97889-7	8/3/2022	WG	N	25										
	OW01004	LORNG_OW01004_08042022	FA97889-8	8/4/2022	WG	N	25										
	OW20007	LORNG_OW20007_08032022	FA97889-9	8/3/2022	WG	N	25										
FA97924	BW03002	LORNG_BW03002_08052022	FA97924-1	8/5/2022	WG	N	25										
	OW05004	LORNG_OW05004_08052022	FA97924-2	8/5/2022	WG	N	25										
		LORNG_OW05004_08052022FD	FA97924-3	8/5/2022	WG	FD	25										
FA97927	BW02002	LORNG_BW02002_08042022	FA97927-1	8/4/2022	WG	N	25										
	BW03001	LORNG_BW03001_08052022	FA97927-2	8/5/2022	WG	N	25										
	BW20001	LORNG_BW20001_08042022	FA97927-3	8/4/2022	WG	N	25										
	FIELDQC	LORNG_EB024_08052022	FA97927-9	8/5/2022	WQ	EB	25										
	OW02002	LORNG_OW02002_08042022	FA97927-4	8/4/2022	WG	N	25										
	OW05002	LORNG_OW05002_08042022	FA97927-5	8/4/2022	WG	N	25										
	OW05003	LORNG_OW05003_08052022	FA97927-6	8/5/2022	WG	N	25										
	OW20001	LORNG_OW20001_08042022	FA97927-7	8/4/2022	WG	N	25										
	OW20002	LORNG_OW20002_08042022	FA97927-8	8/4/2022	WG	N	25										
FA97958	BB_BW001	LORNG_BB_BW001_08072022	FA97958-13	8/7/2022	WG	N	25										
	BB_OW001	LORNG_BB_OW001_08072022	FA97958-14	8/7/2022	WG	N	25										
	BW01007	LORNG_BW01007_08062022	FA97958-1	8/6/2022	WG	N	25										

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/2022

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS		VOCs		SVOCs by SIM	SVOCs	Metals			
						Method Class										
						Analysis Method	M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	SW6010C	SW6020	SW6020A	SW7470A
						Fraction	T	T	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA97958	BW01008	LORNG_BW01008_08062022	FA97958-2	8/6/2022	WG	N	25									
FA97958	BW05008	LORNG_BW05008_08062022	FA97958-3	8/6/2022	WG	N	25									
	BW05009	LORNG_BW05009_08062022	FA97958-4	8/6/2022	WG	N	25									
	BW05010	LORNG_BW05010_08062022	FA97958-5	8/6/2022	WG	N	25									
	BW16002	LORNG_BW16002_08072022	FA97958-15	8/7/2022	WG	N	25									
	BW18007	LORNG_BW18007_08062022	FA97958-6	8/6/2022	WG	N	25									
		LORNG_BW18007_08062022FD	FA97958-7	8/6/2022	WG	FD	25									
	EBGB_BW002	LORNG_EBGB_BW002_08052022	FA97958-10	8/5/2022	WG	N	25									
	EBGB_OW002	LORNG_EBGB_OW002_08062022	FA97958-11	8/6/2022	WG	N	25									
	FIELDQC	LORNG_EB025_08052022	FA97958-8	8/5/2022	WQ	EB	25									
		LORNG_EB026_08062022	FA97958-9	8/6/2022	WQ	EB	25									
	OW16003	LORNG_OW16003_08062022	FA97958-12	8/6/2022	WG	N	25									
	OW20003	LORNG_OW20003_08072022	FA97958-17	8/7/2022	WG	N	25									
FA98003	BB_OW002	LORNG_BB_OW002_08092022	FA98003-1	8/9/2022	WG	N	25									
		LORNG_BB_OW002_08092022FD	FA98003-2	8/9/2022	WG	FD	25									
	BW13001	LORNG_BW13001_08092022	FA98003-3	8/9/2022	WG	N	25									
	EBGB_BW001	LORNG_EBGB_BW001_08092022	FA98003-5	8/9/2022	WG	N	25									
	FIELDQC	LORNG_EB028_08092022	FA98003-4	8/9/2022	WQ	EB	25									
FA98011	BB_BW002	LORNG_BB_BW002_08092022	FA98011-10	8/9/2022	WG	N	25									
	BW10007	LORNG_BW10007_08082022	FA98011-1	8/8/2022	WG	N	25									
	BW10008	LORNG_BW10008_08092022	FA98011-11	8/9/2022	WG	N	25									
	BW12006	LORNG_BW12006_08092022	FA98011-12	8/9/2022	WG	N	25									
	BW16001	LORNG_BW16001_08082022	FA98011-2	8/8/2022	WG	N	25									
	BW18006	LORNG_BW18006_08082022	FA98011-3	8/8/2022	WG	N	25									
	BW18008	LORNG_BW18008_08082022	FA98011-4	8/8/2022	WG	N	25									
	BW18009	LORNG_BW18009_08082022	FA98011-5	8/8/2022	WG	N	25									
	BW18010	LORNG_BW18010_08082022	FA98011-6	8/8/2022	WG	N	25									
	FIELDQC	LORNG_EB027_08082022	FA98011-7	8/8/2022	WQ	EB	25									
	WBGB_BW001	LORNG_WBGB_BW001_08082022	FA98011-8	8/8/2022	WG	N	25									
		LORNG_WBGB_BW001_08082022FD	FA98011-9	8/8/2022	WG	FD	25									
FA98224	OW16002	LORNG_OW16002_08162022	FA98224-1	8/16/2022	WG	N	25									
	OW17002	LORNG_OW17002_08162022	FA98224-2	8/16/2022	WG	N	25									
FA98255	OW23001	LORNG_OW23001_08172022	FA98255-1	8/17/2022	WG	N	25									
FA98281	BW06008	LORNG_BW06008_08172022	FA98281-1	8/17/2022	WG	N	25									
	OW20004	LORNG_OW20004_08182022	FA98281-2	8/18/2022	WG	N	25									
	OW20005	LORNG_OW20005_08182022	FA98281-3	8/18/2022	WG	N	25									
FA98310	BW13002	LORNG_BW13002_08192022	FA98310-1	8/19/2022	WG	N	25									
		LORNG_BW13002_08192022FD	FA98310-2	8/19/2022	WG	FD	25									
	FIELDQC	LORNG_EB029_08192022	FA98310-3	8/19/2022	WQ	EB	25									

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/2022

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS		VOCs		SVOCs by SIM	SVOCs	Metals				
					Analysis Method		M537	MS014.0	SW8011	SW8260C	BNASIMD	SW8270D	SW6010C	SW6020	SW6020A	SW7470A	
					Fraction		T	T	T	T	T	T	T	T	T	T	
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	
FA98310	GC_BW001	LORNG_GC_BW001_08182022	FA98310-4	8/18/2022	WG	N	25										
FA98346	BW13003	LORNG_BW13003_08192022	FA98346-1	8/19/2022	WG	N	25										
	BW18003	LORNG_BW18003_08202022	FA98346-2	8/20/2022	WG	N	25										
	FIELDQC	LORNG_EB030_08192022	FA98346-3	8/19/2022	WQ	EB	25										
		LORNG_EB031_08212022	FA98346-4	8/21/2022	WQ	EB	25										
	LF2MW1	LORNG_LF2MW1_08212022	FA98346-5	8/21/2022	WG	N	25										
SP4196	FIELDQC	LORNG_TB09_08022022	SP4196-2	8/2/2022	WQ	TB				72							
	OW08002	LORNG_OW08002_08022022_K	SP4196-1	8/2/2022	WG	N			2	72	19	56	16		6	1	
SP4244	BW01006	LORNG_BW01006_08032022_K	SP4244-1	8/3/2022	WG	N							1				
		LORNG_BW01006_08032022FD_K	SP4244-2	8/3/2022	WG	FD							1				
	BW01009	LORNG_BW01009_08032022_K	SP4244-3	8/3/2022	WG	N							1				
SP4358	BW01008	LORNG_BW01008_08062022_K	SP4358-1	8/6/2022	WG	N							1				
	BW12006	LORNG_BW12006_08092022_K	SP4358-2	8/9/2022	WG	N			2	72							
	FIELDQC	LORNG_TB09_08092022	SP4358-3	8/9/2022	WQ	TB			2	72							
SP4667	OW07003	LORNG_OW07003_08232022_K	SP4667-1	8/23/2022	WG	N			2	72	19	56	16	6		1	

Notes:
Samples highlighted in Grey represent samples that received Stage 4 Validation checks
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WQ = Water Quality Control
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97652			FA97845			
			Location	BW07002	BW07003	OW07002	BW07001	BW08003	BW09001	OW01003
			Sample Date	7/26/2022	7/26/2022	7/26/2022	8/2/2022	8/3/2022	8/3/2022	8/3/2022
			Sample ID	LORNG_BW07002_07262022	LORNG_BW07003_07262022	LORNG_OW07002_07262022	LORNG_BW07001_08022022	LORNG_BW08003_08032022	LORNG_BW09001_08032022	LORNG_OW01003_08032022
			QC Code	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	11.1	4 U	4 U	4 U	3.7 U	4.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	51.3	493	5.3 J	4 U	4.2 J	8.4	4.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	107	5 J	4 U	4 U	3.7 U	4.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	4 U	4 U	4 U	4 U	3.7 U	4.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 UJ	4 U	4 UJ	4 R	4 R	3.7 UJ	4.6 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	4 U	4 U	4 U	4 U	3.7 U	4.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	11	84	13.1	5.1	5.9	2.2 J	2.3 U
		Perfluorobutanoic acid (PFBA)	NG/L	18.3	80.5	25.7	19.5	17.5	14.1	4.6 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.4 J	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	2 U	2 U	2 U	2 UJ	1.9 U	2.3 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	6.2	74	5.9	3.4 J	2.3 J	1.9 U	2.3 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	21.6	134	37.9	20.9	19.3	5.8	2.3 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	168	957	145	79.7	141	49.9	1.2 J
		Perfluorohexanoic acid (PFHxA)	NG/L	48.4	235 J	50.7	27.6	46	18.9	2.3 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U
		Perfluorononanoic acid (PFNA)	NG/L	2.2 J	26.8	8.5	4	2.1 J	1.9 U	2.3 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.6 J	2 U	10 U	2 U	1.1 J	1.9 U	2.3 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	121	3,440	238	94.9	53.7	13.3	2.3 U
		Perfluorooctanoic acid (PFOA)	NG/L	46.1	256	43.3	24.3	45.5	12.6	2.3 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	11.5	122	19.4	8	6.4	2.4 J	2.3 U
		Perfluoropentanoic acid (PFPeA)	NG/L	57.6	339	76.2	45.2	48.8	17.4	2.3 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	2 U	10 U	2 U	2 UJ	1.9 U	2.3 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	2 U	2 U	2 U	2 UJ	1.9 U	2.3 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	2 U	2 U	2 U	2 U	1.9 U	2.3 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and reporting limit considered estimated
R = Sample result is considered unusable for preoject objectives
NG/L = nanogram per liter
PFAS = Per- and Polyfluoroalkyl Substances

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97845						FA97889
			Location	OW07001	OW08001		OW08002	OW09001	OW20006	BW01006
			Sample Date	8/2/2022	8/2/2022		8/2/2022	8/2/2022	8/2/2022	8/3/2022
			Sample ID	LORNG_OW07001_08022022	LORNG_OW08001_08022022	LORNG_OW08001_08022022FD	LORNG_OW08002_08022022	LORNG_OW09001_08022022	LORNG_OW20006_08022022	LORNG_BW01006_08032022
			QC Code	N	N	FD	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	75	12.8	12.1	9.2	4 U	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8 J	4 U	4 U	4 U	4 U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 R	4 U	4 UJ	4 U	4 UJ	4 UJ	4 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	84.8	14.7	14.5	11.9	4	2.7 J	2.7 J
		Perfluorobutanoic acid (PFBA)	NG/L	90.4	22.9	23	21	6 J	7.5 J	2.8 J
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	3.2 J	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	114	9.3	8.9	7.9	1.8 J	2.1 J	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	144	32.9	32.9	30.7	8.4	16	4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	808	357	356	296	106	77	35
		Perfluorohexanoic acid (PFHxA)	NG/L	175	84.5	85.1	74.9	19.8	16.5	4.2
		Perfluorononanesulfonic acid (PFNS)	NG/L	18 J	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	47.1	3.3 J	3.3 J	2.7 J	2 U	1.7 J	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.8 J	4.3	4.4	8.3	2.7 J	2 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	5,280	270	264	259	67.4	103	26.6
		Perfluorooctanoic acid (PFOA)	NG/L	156	98	98.7	81.2	21.6	17.9	6
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	121	20.1	20.2	15.9	4.4	3.9 J	2.8 J
		Perfluoropentanoic acid (PFPeA)	NG/L	292	81.7	82	72.7	18.7	18	4.1
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = n
PFAS = P

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97889						FA97889	
			Location	BW01006	BW01009	BW02001	BW20002	FIELDQC	OW01002	OW01004	
			Sample Date	8/3/2022	8/3/2022	8/3/2022	8/3/2022	8/3/2022	8/3/2022	8/4/2022	
			Sample ID	LORNG_BW01006_08032022FD	LORNG_BW01009_08032022	LORNG_BW02001_08032022	LORNG_BW20002_08032022	LORNG_EB023_08032022	LORNG_OW01002_08032022	LORNG_OW01004_08042022	
			QC Code	FD	N	N	N	EB	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	4 U	3.7 U	4 U	3 J	3.7 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	61.6	4 U	4.1 J	4 U	98.6	77.7	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	28.3	4 U	3.7 U	4 U	25.7	72.4	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	3.7 U	40 U	3.7 U	3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 R	20 R	20 R	19 UJ	40 U	37 R	37 UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	3.7 U	40 U	3.7 U	3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.5 J	11.7	2 U	1.9 J	2 U	56.3	21.8	
		Perfluorobutanoic acid (PFBA)	NG/L	3.1 J	24.1	4 U	7.2 J	4 U	75.8	37.8	
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	2 U	1.9 U	20 U	1.9 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	2 U	1.9 U	2 U	1.2 J	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	2 U	1.9 U	20 U	1.9 U	1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	6.2	2 U	1.9 U	2 U	30.9	16.8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.6 J	38.8	2 U	7.9	2 U	136	81.3	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	32.2	216	2 U	31	2 U	2,600	799	
		Perfluorohexanoic acid (PFHxA)	NG/L	4	66.6	2 U	10.1	2 U	680	154	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	2 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	2 U	3.4 J	2 U	1.9 U	2 U	18.2	10.2	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	5.5 J	2 U	1.9 U	2 U	38	11	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	26.7	350	2 U	29.6	2 U	2,140	1,050	
		Perfluorooctanoic acid (PFOA)	NG/L	5.5	72.3	2 U	10.5	2 U	380	156	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.7 J	13.9	2 U	2.4 J	2 U	70.2	31.2	
		Perfluoropentanoic acid (PFPeA)	NG/L	4.3	63.4	2 U	12	2 U	206	108	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	2 U	1.9 U	20 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	2 U	1.9 U	20 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2 U	1.9 U	20 U	1.9 U	1.9 U	

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Date: 12/13/22
Checked by: CLC
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97889		FA97924				FA97927					
			Location	OW20007		BW03002		OW05004		BW02002		BW03001		BW20001	
			Sample Date	8/3/2022		8/5/2022		8/5/2022		8/4/2022		8/5/2022		8/4/2022	
			Sample ID	LORNG_OW20007_08032022		LORNG_BW03002_08052022		LORNG_OW05004_08052022	LORNG_OW05004_08052022FD	LORNG_BW02002_08042022		LORNG_BW03001_08052022		LORNG_BW20001_08042022	
			QC Code	N		N		N	FD	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	4	U	4	U	3.7	U	3.7	U	4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7	U	4	U	8.2		8.4		3.7	U	3.7	U	4.3	J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	4	U	16.3		16.6		3.7	U	3.7	U	5.2	J
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	4	U	4	U	3.7	U	3.7	U	3.7	U	4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19	UJ	4	U	20	UJ	19	R	19	UJ	3.7	UJ	20	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	4	U	4	U	3.7	U	3.7	U	3.7	U	4	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.6	J	2	U	6		5.9		1.9	U	1.9	U	4.6	
		Perfluorobutanoic acid (PFBA)	NG/L	8.5		4	U	10.9		10.9		3.7	U	3.7	U	11.7	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	2	U	1.9	U	9.3	U	1.9	UJ	10	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	J	2	U	3.3	J	3.4	J	1.9	U	1.9	U	3.5	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	13.5		2	U	19.2		19.5		1.9	U	1.9	U	25.1	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	79.1		2	U	83.3		79.9		1.9	U	1.9	U	124	
		Perfluorohexanoic acid (PFHxA)	NG/L	12.9		1.2	J	12.9		13.5		1.9	U	1.9	U	25.6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	1.4	J	2	U	2.4	J	2.4	J	1.9	U	1.9	U	2.5	J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U	2	U	1.3	J	1.9	U	1.9	U	1.8	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	106		2	U	252		235		1.9	U	1.9	U	144	
		Perfluorooctanoic acid (PFOA)	NG/L	18.7		2	U	13.8		13.8		1.9	U	1.9	U	28.4	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.2		2	U	8.1		10.4		1.9	U	1.9	U	6.6	
		Perfluoropentanoic acid (PFPeA)	NG/L	14.9		1.3	J	20		20.7		1.9	U	1.9	U	28.9	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	UJ	2	U	1.9	U	9.3	U	1.9	UJ	10	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	2	U	1.9	U	9.3	U	1.9	UJ	10	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	2	U

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Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97927						FA97958
			Location	FIELDQC	OW02002	OW05002	OW05003	OW20001	OW20002	BB_BW001
			Sample Date	8/5/2022	8/4/2022	8/4/2022	8/5/2022	8/4/2022	8/4/2022	8/7/2022
			Sample ID	LORNG_EB024_08052022	LORNG_OW02002_08042022	LORNG_OW05002_08042022	LORNG_OW05003_08052022	LORNG_OW20001_08042022	LORNG_OW20002_08042022	LORNG_BB_BW001_08072022
			QC Code	EB	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	3.7 U	60.9	10.4	8.6	7.5	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	3.7 U	7.2 J	3.7 U	4 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	150 U	3.7 R	3.7 UJ	3.7 UJ	20 UJ	19 UJ	3.7 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.9 U	76.7	12.7	2 U	1.4 J	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U	3.7 U	28.9	16.5	3 J	3.5 J	3.7 U
		Perfluorodecane sulfonate (PFDS)	NG/L	74 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	74 U	1.9 U	1.9 U	1.9 U	10 U	9.3 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	31.8	12.9	2 U	1.9 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	57.4	26.6	1.5 J	3.6 J	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	6.3	775	194	5	20.3	1.4 J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.8 J	93.3	29.5	1.8 J	4.5	2.7 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	16.7	6.3	2 U	1.9 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	2.4 J	1.9 U	2 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	10.4	1,010	521	5.5	13.2	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	1.9 U	3.7	117	25.8	1.2 J	4	1.9 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	1.9 U	100	21.8	2 U	1.5 J	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	2 J	105	53.7	3 J	6.2	2.5 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	74 U	1.9 U	1.9 U	1.9 U	10 U	9.3 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	74 U	1.9 U	1.9 U	1.9 U	10 U	9.3 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	74 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97958						FA97958
			Location	BB_OW001	BW01007	BW01008	BW05008	BW05009	BW05010	BW16002
			Sample Date	8/7/2022	8/6/2022	8/6/2022	8/6/2022	8/6/2022	8/6/2022	8/7/2022
			Sample ID	LORNG_BB_OW001_08072022	LORNG_BW01007_08062022	LORNG_BW01008_08062022	LORNG_BW05008_08062022	LORNG_BW05009_08062022	LORNG_BW05010_08062022	LORNG_BW16002_08072022
			QC Code	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	4.2 U	4 U	4.3 U	4 U	4 U	3.8 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U	13.3	10.7	4.3 U	545	4.3 J	3.8 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	4.2 U	4 U	4.3 U	108	4 U	3.8 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	4.2 U	4 UJ	4.3 U	4 UJ	4.3 U	3.8 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 UJ	4.2 U	4 R	21 R	4 R	4 UJ	3.8 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	4.2 U	4 UJ	4.3 U	4 UJ	4.3 U	3.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.3	6.8	2.5 J	1.9 J	114	2 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 J	13.2	4.7 J	21 UJ	155	4 J	3.8 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	2.1 U	2 U	2.1 U	2 UJ	2 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	2.1 U	2 U	2.1 U	2.3 J	2 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	2.1 U	2 U	2.1 U	2 UJ	2 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.3 J	7.3	2 U	2.1 U	94.6	2 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.6	20.8	4.4	2.3 J	214	2 U	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	96.2	245	52.8	6.4	1300	4.4	1.2 J
		Perfluorohexanoic acid (PFHxA)	NG/L	15.2	54.2	15.3	4 J	388	1.2 J	1.3 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	2.1 U	2 U	2.1 U	5	2 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	3.1 J	2 U	2.1 U	51.5	2 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	5.6	2 UJ	2.1 UJ	21.3 J	2 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	72.8	299	24.6	3.7 J	2,800	4.3	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	23.5	69.2	17.2	2.3 J	287	1.2 J	1.9 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	5.7	10.1	3.6 J	1.3 J	168	2 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	10.6	41.8	12.9	8	515	1 J	1.8 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	2.1 U	2 UJ	2.1 U	2 UJ	2 UJ	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	2.1 U	2 U	2.1 U	2 UJ	2 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	2.1 U	2 U	2.1 U	2 UJ	2 U	1.9 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97958						FA97958	
		Location	BW18007		EBGB_BW002	EBGB_OW002	FIELDQC	FIELDQC	OW16003	
		Sample Date	8/6/2022		8/5/2022	8/6/2022	8/5/2022	8/6/2022	8/6/2022	
		Sample ID	LORNG_BW18007_08062022		LORNG_EBGB_BW002_08052022	LORNG_EBGB_OW002_08062022	LORNG_EB025_08052022	LORNG_EB026_08062022	LORNG_OW16003_08062022	
		QC Code	N		N	N	EB	EB	N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 UJ	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 UJ	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 UJ	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 UJ	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 R	3.7 UJ	3.7 UJ	3.7 U	3.7 U	4 U	3.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 UJ	3.7 U	3.7 U	3.7 U	3.7 U	4 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 UJ	2.3 J	3.7 U	3.7 U	3.7 U	4 U	6.6 J
		Perfluorodecane sulfonate (PFDS)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.5 J	2.7 J	6.1	2.9 J	1.9 U	2 U	4.4
		Perfluorohexanoic acid (PFHxA)	NG/L	2 UJ	1 J	1.3 J	1.3 J	1.9 U	2 U	1.9 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 UJ	2.4 J	8.4	1.9 U	1.9 U	2 U	1.9 U
		Perfluorooctanoic acid (PFOA)	NG/L	2 UJ	1.2 J	2.2 J	1.6 J	1.9 U	2 U	2 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 UJ	1.9 U	2.2 J	1.5 J	1.9 U	2 U	3.4 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U

Notes:
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PFAS = F

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97958	FA98003					FA98011
			Location	OW20003	BB_OW002		BW13001	EBGB_BW001	FIELDQC	BB_BW002
			Sample Date	8/7/2022	8/9/2022		8/9/2022	8/9/2022	8/9/2022	8/9/2022
			Sample ID	LORNG_OW20003_08072022	LORNG_BB_OW002_08092022	LORNG_BB_OW002_08092022FD	LORNG_BW13001_08092022	LORNG_EBGB_BW001_08092022	LORNG_EB028_08092022	LORNG_BB_BW002_08092022
			QC Code	N	N	FD	N	N	EB	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	3.7 U	4 U	3.7 U	3.7 U	3.7 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	3.7 U	4 U	3.7 U	2.7 J	3.7 U	2.8 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	3.7 U	4 U	3.7 U	3.7 U	3.7 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	3.7 U	4 U	3.7 U	3.7 U	3.7 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 UJ	19 UJ	4 UJ	19 UJ	3.7 UJ	3.7 U	20 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	3.7 U	4 U	3.7 U	3.7 U	3.7 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.9 J	1.9 U	2 U	1.9 U	0.97 J	1.9 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 UJ	3.7 U	4 U	2.3 J	2.7 J	3.7 U	4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.2 J	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	1.9 U	2 U	0.97 J	1.9 U	1.9 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	47.5	1.1 J	2 U	4.4	3 J	1.9 U	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.1 J	1.9 U	2 U	1.1 J	1.7 J	1.9 U	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	74.8 J	1.9 U	2 U	6.1	1.4 J	1.9 U	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	1.6 J	1.9 U	2 U	1.9 U	1.3 J	1.9 U	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.7	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 U	1.9 U	2 U	1 J	1.8 J	1.9 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U

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Date: 12/13/22
Checked by: CLC
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98011						
			Location	BW10007	BW10008	BW12006	BW16001	BW18006	BW18008	BW18009
			Sample Date	8/8/2022	8/9/2022	8/9/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022
			Sample ID	LORNG_BW10007_08082022	LORNG_BW10008_08092022	LORNG_BW12006_08092022	LORNG_BW16001_08082022	LORNG_BW18006_08082022	LORNG_BW18008_08082022	LORNG_BW18009_08082022
			QC Code	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4.5 U	3.7 U	4 U	4 U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4.5 J	33.7	4 U	4 U	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4.5 U	3.7 U	4 U	4 U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4.5 U	3.7 U	4 U	4 U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 U	22 UJ	3.7 U	4 U	20 UJ	20 UJ	4 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4.5 U	3.7 U	4 U	4 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2.2 U	15.5	2 U	2 U	2 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	5.1 J	5 J	12.7	4 U	3 J	2.3 J	4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2.2 U	13.3	2 U	2 U	2 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.5 J	1.3 J	17	2 U	1.6 J	2 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.2	7.8	137	2 U	3.5 J	17	7.3
		Perfluorohexanoic acid (PFHxA)	NG/L	5.1	3.6 J	43.9	2 U	2.2 J	1.9 J	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2.2 U	1.4 J	2 U	2 U	2 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	3.8 J	4.3 J	442	2 U	2.2 J	20.9	1.6 J
		Perfluorooctanoic acid (PFOA)	NG/L	2.9 J	2.8 J	21	2 U	2.2 J	2.5 J	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2.2 U	20.2	2 U	2 U	2 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	7.7	3.3 J	36	2 U	4.2	1.5 J	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2.2 U	1.9 U	2 U	2 U	2 U	2 U

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Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA98011				FA98224		FA98255
		Location	BW18010	FIELDQC	WBGB_BW001		OW16002	OW17002	OW23001
		Sample Date	8/8/2022	8/8/2022	8/8/2022		8/16/2022	8/16/2022	8/17/2022
		Sample ID	LORNG_BW18010_08082022	LORNG_EB027_08082022	LORNG_WBGB_BW001_08082022	LORNG_WBGB_BW001_08082022FD	LORNG_OW16002_08162022	LORNG_OW17002_08162022	LORNG_OW23001_08172022
		QC Code	N	EB	N	FD	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.2 J	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 UJ	20 U	3.7 U	19 U	3.7 UJ	3.7 U	3.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U	4 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	2 U	1 J	1.1 J	1.1 J	2 J	2.4 J
		Perfluorobutanoic acid (PFBA)	NG/L	19 U	4 U	3.7 U	3.7 U	4 J	13.7	8.4 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.6 J	15.7	7.8
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	2 U	4.6	4.7	4.2	29.1	27.1
		Perfluorohexanoic acid (PFHxA)	NG/L	6.2	2 U	2.1 J	2.1 J	5.3	18.3	10.4
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.1 J	1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	2 U	3.5 J	3.9	2.2 J	39.4	27.7
		Perfluorooctanoic acid (PFOA)	NG/L	1.9 U	2 U	1.2 J	1.2 J	1.7 J	10.2	7.6
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	2 U	1.1 J	1.1 J	1.9 U	2.9 J	3.7
		Perfluoropentanoic acid (PFPeA)	NG/L	1.2 J	2 U	1.9 J	1.9 J	5.1	35.5	15.5
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U

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Date: 12/13/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98281		FA98281		FA98310				FA98310	
			Location	BW06008		OW20004	OW20005	BW13002			FIELDQC		GC_BW001
			Sample Date	8/17/2022		8/18/2022	8/18/2022	8/19/2022			8/19/2022		8/18/2022
			Sample ID	LORNG_BW06008_08172022		LORNG_OW20004_08182022	LORNG_OW20005_08182022	LORNG_BW13002_08192022		LORNG_BW13002_08192022FD	LORNG_EB029_08192022		LORNG_GC_BW001_08182022
			QC Code	N		N	N	N		FD	EB		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8	U	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.8	U	3.8	U	3.7	U	21		21.5		3.7	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8	U	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.8	U	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	19	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.8	R	19	UJ	3.7	UJ	3.7	UJ	3.7	U	3.7	U	19	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8	U	3.8	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.5	J	1.3	J	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanoic acid (PFBA)	NG/L	2.7	J	3.8	U	2.7	J	3.3	J	3.4	J	3.7	U	5.7	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	9.3	U	9.3	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.2	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.6	J	1.9	U	2.3	J	1.6	J	1.6	J	1.9	U	1.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	8.8		15.8		19		2.3	J	2.3	J	1.9	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	J	1.1	J	2.6	J	3.3	J	3.3	J	1.9	U	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	12.7		35.7		21		1.9	J	1.9	J	1.9	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	2.4	J	1.9	U	3.5	J	1.1	J	1.2	J	1.9	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.99	J	1.9	J	1.8	J	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.4	J	1.9	U	3.9		5.2		5.3		1.9	U	2.3	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	UJ	9.3	U	9.3	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	9.3	U	9.3	UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	9.3	U	9.3	UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Ana
R = Sam
NG/L = n
PFAS = F

Prepared by: AKN
Date: 12/13/22
Checked by: CLC
Date: 12/14/2022

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98346		FA98346		
			Location	BW13003	BW18003	FIELDQC		LF2MW1
			Sample Date	8/19/2022	8/20/2022	8/19/2022	8/21/2022	8/21/2022
			Sample ID	LORNG_BW13003_08192022	LORNG_BW18003_08202022	LORNG_EB030_08192022	LORNG_EB031_08212022	LORNG_LF2MW1_08212022
			QC Code	N	N	EB	EB	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	3.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.8 J	2.9 J	3.7 U	3.7 U	3.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	3.7 U	3.7 U	3.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	3.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 R	4 U	3.7 U	3.7 U	3.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	3.7 U	3.7 U	3.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.7 J	2 U	1.9 U	1.9 U	1.9 U
		Perfluorobutanoic acid (PFBA)	NG/L	8.8	4 U	3.7 U	3.7 U	3.7 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	15.6	2 U	1.9 U	1.9 U	1.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	15.2	1.1 J	1.9 U	1.9 U	11.5
		Perfluorohexanoic acid (PFHxA)	NG/L	11.2	2 U	1.9 U	1.9 U	1.9 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluorononanoic acid (PFNA)	NG/L	1 J	2 U	1.9 U	1.9 U	1.9 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19.4	1 J	1.9 U	1.9 U	9.6
		Perfluorooctanoic acid (PFOA)	NG/L	11.7	2 U	1.9 U	1.9 U	1.7 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.2 J	2 U	1.9 U	1.9 U	1.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	13.4	2 U	1.9 U	1.9 U	1.9 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	1.9 U	1.9 U	1.9 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Ana
R = Sam
NG/L = r
PFAS = F

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Checked by: CLC
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP4196				SP4244								SP4358	
		Location		FIELDQC		OW08002		BW01006				BW01009		BW01008			
		Sample Date		8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022			
		Sample ID		LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K			
		QC Code		TB		N		N		FD		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,1,1-TRICHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,1,2,2-TETRACHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	0.5	U	0.5	U										
		1,1,2-TRICHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,1-DICHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,1-DICHLOROETHENE	UG/L	0.5	U	0.5	U										
		1,1-DICHLOROPROPENE	UG/L	0.5	U	0.5	U										
		1,2,3-TRICHLOROBENZENE	UG/L	0.5	U	0.5	U										
		1,2,3-TRICHLOROPROPANE	UG/L	0.5	U	0.5	U										
		1,2,4-TRICHLOROBENZENE	UG/L	1.2		0.5	U										
		1,2,4-TRIMETHYLBENZENE	UG/L	0.5	U	0.5	U										
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.75	U	0.024	U										
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.5	U	0.024	U										
		1,2-DICHLOROBENZENE	UG/L	0.15	J	0.5	U										
		1,2-DICHLOROETHANE	UG/L	0.5	U	0.5	U										
		1,2-DICHLOROPROPANE	UG/L	0.5	U	0.5	U										
		1,3,5-TRICHLOROBENZENE	UG/L	0.5	U	0.5	U										
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	0.5	U	0.5	U										
		1,3-DICHLOROBENZENE	UG/L	0.5	U	0.5	U										
		1,3-DICHLOROPROPANE	UG/L	0.5	U	0.5	U										
		1,4-DICHLOROBENZENE	UG/L	0.5	U	0.5	U										
		2,2-DICHLOROPROPANE	UG/L	0.5	U	0.5	U										
		2-CHLOROTOLUENE	UG/L	0.5	U	0.5	U										
		2-HEXANONE	UG/L	2.5	U	2.5	U										
		4-CHLOROTOLUENE	UG/L	0.5	U	0.5	U										
		ACETONE	UG/L	2.5	U	2.5	U										

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP4196				SP4244								SP4358	
		Location		FIELDQC		OW08002		BW01006				BW01009		BW01008			
		Sample Date		8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022			
		Sample ID		LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K			
		QC Code		TB		N		N		FD		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	BENZENE	UG/L	0.5	U	0.5	U										
		BROMOBENZENE	UG/L	0.5	U	0.5	U										
		BROMOCHLOROMETHANE	UG/L	0.5	U	0.5	U										
		BROMODICHLOROMETHANE	UG/L	0.5	U	0.5	U										
		BROMOFORM	UG/L	0.5	U	0.5	U										
		BROMOMETHANE	UG/L	1	U	1	U										
		CARBON DISULFIDE	UG/L	0.5	U	0.5	U										
		CARBON TETRACHLORIDE	UG/L	0.5	U	0.5	U										
		CHLOROBENZENE	UG/L	0.5	U	0.5	U										
		CHLOROETHANE	UG/L	1	U	1	U										
		CHLOROFORM	UG/L	0.5	U	0.5	U										
		CHLOROMETHANE	UG/L	0.72	J	1	U										
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.5	U	0.26	J										
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5	U	0.5	U										
		CYCLOHEXANE	UG/L	0.5	U	0.5	U										
		DIBROMOCHLOROMETHANE	UG/L	0.5	U	0.5	U										
		DIBROMOMETHANE	UG/L	0.5	U	0.5	U										
		DICHLORODIFLUOROMETHANE	UG/L	1	U	1	U										
		ETHYLBENZENE	UG/L	0.5	U	0.5	U										
		HEXACHLOROBUTADIENE	UG/L	0.75	U	0.75	U										
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5	U	0.5	U										
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5	U	0.5	U										
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1	U	1	U										
		METHYL ACETATE	UG/L	0.75	U	0.75	U										
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5	U	2.5	U										
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5	U	2.5	U										
		METHYLCYCLOHEXANE	UG/L	0.5	U	0.5	U										

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Former Loring Air Force Base, Limestone, Maine

		SDG		SP4196				SP4244								SP4358	
		Location		FIELDQC		OW08002		BW01006				BW01009		BW01008			
		Sample Date		8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022			
		Sample ID		LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K			
		QC Code		TB		N		N		FD		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	METHYLENE CHLORIDE	UG/L	2.5	U	2.5	U										
		NAPHTHALENE	UG/L	0.32	J	0.5	U										
		N-BUTYLBENZENE	UG/L	0.5	U	0.5	U										
		N-PROPYLBENZENE	UG/L	0.5	U	0.5	U										
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5	U	0.5	U										
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5	U	0.5	U										
		SEC-BUTYLBENZENE	UG/L	0.5	U	0.5	U										
		STYRENE	UG/L	0.5	U	0.5	U										
		T-BUTYLBENZENE	UG/L	0.5	U	0.5	U										
		TERT-BUTYL METHYL ETHER	UG/L	0.5	U	0.5	U										
		TETRACHLOROETHYLENE(PCE)	UG/L	0.5	U	0.5	U										
		TOLUENE	UG/L	0.5	U	0.5	U										
		TRANS-1,2-DICHLOROETHENE	UG/L	0.5	U	0.5	U										
		TRANS-1,3-DICHLOROPROPENE	UG/L	0.5	U	0.5	U										
		TRICHLOROETHYLENE (TCE)	UG/L	0.5	U	0.58	J										
		TRICHLOROFLUOROMETHANE	UG/L	1	U	1	U										
		VINYL ACETATE	UG/L	0.5	U	0.5	U										
		VINYL CHLORIDE	UG/L	1	U	1	U										
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L			0.47	U										
		2-METHYLNAPHTHALENE	UG/L			0.093	U										
		ACENAPHTHENE	UG/L			0.093	U										
		ACENAPHTHYLENE	UG/L			0.093	U										
		ANTHRACENE	UG/L			0.093	U										
		BENZO(A)ANTHRACENE	UG/L			0.093	U										
		BENZO(A)PYRENE	UG/L			0.093	U										
		BENZO(B)FLUORANTHENE	UG/L			0.093	U										
		BENZO(G,H,I)PERYLENE	UG/L			0.093	U										
		BENZO(K)FLUORANTHENE	UG/L			0.093	U										

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP4196				SP4244						SP4358	
		Location	FIELDQC		OW08002		BW01006				BW01009		BW01008	
		Sample Date	8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022	
		Sample ID	LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K	
		QC Code	TB		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs by SIM	T	CHRYSENE	UG/L			0.093	U								
		DIBENZ(A,H)ANTHRACENE	UG/L			0.093	U								
		FLUORANTHENE	UG/L			0.093	U								
		FLUORENE	UG/L			0.093	U								
		INDENO(1,2,3-C,D)PYRENE	UG/L			0.093	UJ								
		NAPHTHALENE	UG/L			0.093	U								
		PENTACHLOROPHENOL	UG/L			0.47	UJ								
		PHENANTHRENE	UG/L			0.093	U								
		PYRENE	UG/L			0.093	U								
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L			7	U								
		1,2-DICHLOROBENZENE	UG/L			7	U								
		1,2-DIPHENYLHYDRAZINE	UG/L			14	U								
		1,3-DICHLOROBENZENE	UG/L			7	U								
		1,4-DICHLOROBENZENE	UG/L			7	U								
		1-METHYLNAPHTHALENE	UG/L			7	U								
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L			7	UJ								
		2,3,4,6-TETRACHLOROPHENOL	UG/L			7	U								
		2,4,5-TRICHLOROPHENOL	UG/L			18	UJ								
		2,4,6-TRICHLOROPHENOL	UG/L			7	UJ								
		2,4-DICHLOROPHENOL	UG/L			7	UJ								
		2,4-DIMETHYLPHENOL	UG/L			7	U								
		2,4-DINITROPHENOL	UG/L			18	U								
		2,4-DINITROTOLUENE	UG/L			7	U								
		2,6-DINITROTOLUENE	UG/L			7	U								
		2-CHLORONAPHTHALENE	UG/L			7	U								
		2-CHLOROPHENOL	UG/L			7	UJ								
		2-METHYLPHENOL (O-CRESOL)	UG/L			7	U								
		2-NITROANILINE	UG/L			18	U								

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP4196				SP4244						SP4358	
		Location	FIELDQC		OW08002		BW01006				BW01009		BW01008	
		Sample Date	8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022	
		Sample ID	LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K	
		QC Code	TB		N		N		FD		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	2-NITROPHENOL	UG/L			7	UJ								
		3,3'-DICHLOROBENZIDINE	UG/L			7	UJ								
		3-NITROANILINE	UG/L			18	U								
		4,6-DINITRO-2-METHYLPHENOL	UG/L			18	U								
		4-BROMOPHENYL PHENYL ETHER	UG/L			7	U								
		4-CHLORO-3-METHYLPHENOL	UG/L			7	U								
		4-CHLOROANILINE	UG/L			7	U								
		4-CHLOROPHENYL PHENYL ETHER	UG/L			7	U								
		4-NITROANILINE	UG/L			18	U								
		4-NITROPHENOL	UG/L			18	UJ								
		ANTHRACENE	UG/L			7	U								
		BENZALDEHYDE	UG/L			7	U								
		BENZIDINE	UG/L			35	UJ								
		BENZOIC ACID	UG/L			18	UJ								
		BENZYL ALCOHOL	UG/L			7.2	J								
		BENZYL BUTYL PHTHALATE	UG/L			7	U								
		BIPHENYL (DIPHENYL)	UG/L			7	U								
		BIS(2-CHLOROETHOXY) METHANE	UG/L			7	U								
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L			7	U								
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L			7	U								
		CARBAZOLE	UG/L			7	U								
		CRESOLS, M & P	UG/L			7	U								
		DIETHYL PHTHALATE	UG/L			7	U								
		DIMETHYL PHTHALATE	UG/L			7	U								
		DI-N-BUTYL PHTHALATE	UG/L			7	U								
		DI-N-OCTYLPHTHALATE	UG/L			7	U								
		HEXACHLOROBENZENE	UG/L			7	U								
		HEXACHLOROBUTADIENE	UG/L			7	U								

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July - August 2022 New Wells Sampling
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		SDG	SP4196				SP4244						SP4358	
		Location	FIELDQC		OW08002		BW01006				BW01009		BW01008	
		Sample Date	8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022	
		Sample ID	LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K	
		QC Code	TB		N		N		FD		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	HEXACHLOROCYCLOPENTADIENE	UG/L			7	R								
		HEXACHLOROETHANE	UG/L			7	U								
		ISOPHORONE	UG/L			7	U								
		NITROBENZENE	UG/L			7	U								
		N-NITROSODIMETHYLAMINE	UG/L			7	U								
		N-NITROSODI-N-PROPYLAMINE	UG/L			7	U								
		N-NITROSODIPHENYLAMINE	UG/L			7	U								
		PHENOL	UG/L			7	U								
		PYRIDINE	UG/L			35	U								
Metals	T	ALUMINUM	UG/L			140	J								
		ANTIMONY	UG/L			0.5	U								
		ARSENIC	UG/L			4	U								
		BARIUM	UG/L			53.5									
		BERYLLIUM	UG/L			0.5	U								
		CADMIUM	UG/L			3	U								
		CALCIUM	UG/L			97,500									
		CHROMIUM, TOTAL	UG/L			4	U								
		COBALT	UG/L			4	U								
		COPPER	UG/L			10	U								
		IRON	UG/L			148									
		LEAD	UG/L			0.092	J								
		MAGNESIUM	UG/L			13,800									
		MANGANESE	UG/L			46.7		4.3	J	4.3	J	177		2	J
		MERCURY	UG/L			0.1	U								
		NICKEL	UG/L			4	U								
		POTASSIUM	UG/L			998	J								
		SELENIUM	UG/L			3	U								
		SILVER	UG/L			0.4	U								

Prepared by: AKN
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP4196				SP4244						SP4358	
		Location		FIELDQC		OW08002		BW01006				BW01009		BW01008	
		Sample Date		8/2/2022		8/2/2022		8/3/2022				8/3/2022		8/6/2022	
		Sample ID		LORNG_TB09_08022022		LORNG_OW08002_08022022_K		LORNG_BW01006_08032022_K		LORNG_BW01006_08032022FD_K		LORNG_BW01009_08032022_K		LORNG_BW01008_08062022_K	
		QC Code		TB		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	T	SODIUM	UG/L			13,300									
		THALLIUM	UG/L			0.4	U								
		VANADIUM	UG/L			4	U								
		ZINC	UG/L			0.87	J								

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667			
			Location	BW12006		FIELDQC		OW07003			
			Sample Date	8/9/2022		8/9/2022		8/23/2022			
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K			
			QC Code	N		TB		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1,1-TRICHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1,2,2-TETRACHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1,2-TRICHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1-DICHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1-DICHLOROETHENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,1-DICHLOROPROPENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2,3-TRICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2,3-TRICHLOROPROPANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2,4-TRICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2,4-TRIMETHYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.024	U	0.025	U	0.024	UJ		
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.024	U	0.025	U	0.024	UJ		
		1,2-DICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2-DICHLOROETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,2-DICHLOROPROPANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,3,5-TRICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	0.5	U	0.5	U	0.5	U		
		1,3-DICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		1,3-DICHLOROPROPANE	UG/L	0.5	U	0.5	U	0.5	U		
		1,4-DICHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		2,2-DICHLOROPROPANE	UG/L	0.5	U	0.5	U	0.5	U		
		2-CHLOROTOLUENE	UG/L	0.5	U	0.5	U	0.5	U		
		2-HEXANONE	UG/L	2.5	U	2.5	U	2.5	U		
		4-CHLOROTOLUENE	UG/L	0.5	U	0.5	U	0.5	U		
		ACETONE	UG/L	2.5	U	2.5	U	2.5	U		

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667			
			Location	BW12006		FIELDQC		OW07003			
			Sample Date	8/9/2022		8/9/2022		8/23/2022			
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K			
			QC Code	N		TB		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	BENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		BROMOBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		BROMOCHLOROMETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		BROMODICHLOROMETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		BROMOFORM	UG/L	0.5	U	0.5	U	0.5	U		
		BROMOMETHANE	UG/L	1	U	1	U	1	U		
		CARBON DISULFIDE	UG/L	0.5	U	0.5	U	0.5	U		
		CARBON TETRACHLORIDE	UG/L	0.5	U	0.5	U	0.5	U		
		CHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		CHLOROETHANE	UG/L	1	U	1	U	1	U		
		CHLOROFORM	UG/L	0.5	U	0.5	U	0.9	J		
		CHLOROMETHANE	UG/L	1	U	1	U	1	U		
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.5	U	0.5	U	0.5	U		
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5	U	0.5	U	0.5	U		
		CYCLOHEXANE	UG/L	0.5	U	0.5	U	0.5	U		
		DIBROMOCHLOROMETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		DIBROMOMETHANE	UG/L	0.5	U	0.5	U	0.5	U		
		DICHLORODIFLUOROMETHANE	UG/L	1	U	1	U	1	U		
		ETHYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		HEXACHLOROBUTADIENE	UG/L	0.75	U	0.75	U	0.75	U		
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5	U	0.5	U	0.5	U		
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5	U	0.5	U	0.5	U		
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1	U	1	U	1	U		
		METHYL ACETATE	UG/L	0.75	U	0.75	U	0.75	U		
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5	U	2.5	U	2.5	U		
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5	U	2.5	U	2.5	U		
		METHYLCYCLOHEXANE	UG/L	0.5	U	0.5	U	0.5	U		

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667			
			Location	BW12006		FIELDQC		OW07003			
			Sample Date	8/9/2022		8/9/2022		8/23/2022			
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K			
			QC Code	N		TB		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier		
VOCs	T	METHYLENE CHLORIDE	UG/L	2.5	U	1.2	J	2.5	U		
		NAPHTHALENE	UG/L	0.5	U	0.5	U	0.5	U		
		N-BUTYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		N-PROPYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5	U	0.5	U	0.5	U		
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5	U	0.5	U	0.5	U		
		SEC-BUTYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		STYRENE	UG/L	0.5	U	0.5	U	0.5	U		
		T-BUTYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U		
		TERT-BUTYL METHYL ETHER	UG/L	0.5	U	0.5	U	0.5	U		
		TETRACHLOROETHYLENE(PCE)	UG/L	0.5	U	0.5	U	0.5	U		
		TOLUENE	UG/L	0.5	U	0.51	J	0.5	U		
		TRANS-1,2-DICHLOROETHENE	UG/L	0.5	U	0.5	U	0.5	U		
		TRANS-1,3-DICHLOROPROPENE	UG/L	0.5	U	0.5	U	0.5	U		
		TRICHLOROETHYLENE (TCE)	UG/L	0.5	U	0.5	U	0.5	U		
		TRICHLOROFLUOROMETHANE	UG/L	1	U	1	U	1	U		
		VINYL ACETATE	UG/L	0.5	U	0.5	U	0.5	U		
		VINYL CHLORIDE	UG/L	1	U	1	U	1	U		
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L					0.47	U		
		2-METHYLNAPHTHALENE	UG/L					0.094	U		
		ACENAPHTHENE	UG/L					0.094	U		
		ACENAPHTHYLENE	UG/L					0.094	U		
		ANTHRACENE	UG/L					0.094	U		
		BENZO(A)ANTHRACENE	UG/L					0.094	U		
		BENZO(A)PYRENE	UG/L					0.094	U		
		BENZO(B)FLUORANTHENE	UG/L					0.094	U		
		BENZO(G,H,I)PERYLENE	UG/L					0.094	U		
		BENZO(K)FLUORANTHENE	UG/L					0.094	U		

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667	
			Location	BW12006		FIELDQC		OW07003	
			Sample Date	8/9/2022		8/9/2022		8/23/2022	
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K	
			QC Code	N		TB		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs by SIM	T	CHRYSENE	UG/L					0.094	U
		DIBENZ(A,H)ANTHRACENE	UG/L					0.094	U
		FLUORANTHENE	UG/L					0.094	U
		FLUORENE	UG/L					0.094	U
		INDENO(1,2,3-C,D)PYRENE	UG/L					0.094	U
		NAPHTHALENE	UG/L					0.094	U
		PENTACHLOROPHENOL	UG/L					0.47	U
		PHENANTHRENE	UG/L					0.094	U
		PYRENE	UG/L					0.094	U
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L					7.1	U
		1,2-DICHLOROBENZENE	UG/L					7.1	U
		1,2-DIPHENYLHYDRAZINE	UG/L					14	U
		1,3-DICHLOROBENZENE	UG/L					7.1	U
		1,4-DICHLOROBENZENE	UG/L					7.1	U
		1-METHYLNAPHTHALENE	UG/L					7.1	U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L					7.1	U
		2,3,4,6-TETRACHLOROPHENOL	UG/L					7.1	R
		2,4,5-TRICHLOROPHENOL	UG/L					18	UJ
		2,4,6-TRICHLOROPHENOL	UG/L					7.1	UJ
		2,4-DICHLOROPHENOL	UG/L					7.1	UJ
		2,4-DIMETHYLPHENOL	UG/L					7.1	UJ
		2,4-DINITROPHENOL	UG/L					18	UJ
		2,4-DINITROTOLUENE	UG/L					7.1	U
		2,6-DINITROTOLUENE	UG/L					7.1	U
		2-CHLORONAPHTHALENE	UG/L					7.1	U
		2-CHLOROPHENOL	UG/L					7.1	UJ
		2-METHYLPHENOL (O-CRESOL)	UG/L					7.1	UJ
		2-NITROANILINE	UG/L					18	U

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Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667	
			Location	BW12006		FIELDQC		OW07003	
			Sample Date	8/9/2022		8/9/2022		8/23/2022	
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K	
			QC Code	N		TB		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	2-NITROPHENOL	UG/L					7.1	UJ
		3,3'-DICHLOROBENZIDINE	UG/L					7.1	U
		3-NITROANILINE	UG/L					18	U
		4,6-DINITRO-2-METHYLPHENOL	UG/L					18	UJ
		4-BROMOPHENYL PHENYL ETHER	UG/L					7.1	U
		4-CHLORO-3-METHYLPHENOL	UG/L					7.1	UJ
		4-CHLOROANILINE	UG/L					7.1	U
		4-CHLOROPHENYL PHENYL ETHER	UG/L					7.1	U
		4-NITROANILINE	UG/L					18	U
		4-NITROPHENOL	UG/L					18	UJ
		ANTHRACENE	UG/L					7.1	U
		BENZALDEHYDE	UG/L					7.1	U
		BENZIDINE	UG/L					35	U
		BENZOIC ACID	UG/L					18	UJ
		BENZYL ALCOHOL	UG/L					14	UJ
		BENZYL BUTYL PHTHALATE	UG/L					7.1	U
		BIPHENYL (DIPHENYL)	UG/L					7.1	U
		BIS(2-CHLOROETHOXY) METHANE	UG/L					7.1	U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L					7.1	U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L					7.1	U
		CARBAZOLE	UG/L					7.1	U
		CRESOLS, M & P	UG/L					7.1	U
		DIETHYL PHTHALATE	UG/L					7.1	U
		DIMETHYL PHTHALATE	UG/L					7.1	U
		DI-N-BUTYL PHTHALATE	UG/L					7.1	U
		DI-N-OCTYLPHTHALATE	UG/L					7.1	U
		HEXACHLOROBENZENE	UG/L					7.1	U
		HEXACHLOROBUTADIENE	UG/L					7.1	U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667	
			Location	BW12006		FIELDQC		OW07003	
			Sample Date	8/9/2022		8/9/2022		8/23/2022	
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K	
			QC Code	N		TB		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	HEXACHLOROCYCLOPENTADIENE	UG/L					7.1	U
		HEXACHLOROETHANE	UG/L					7.1	U
		ISOPHORONE	UG/L					7.1	U
		NITROBENZENE	UG/L					7.1	U
		N-NITROSODIMETHYLAMINE	UG/L					7.1	U
		N-NITROSODI-N-PROPYLAMINE	UG/L					7.1	U
		N-NITROSODIPHENYLAMINE	UG/L					7.1	U
		PHENOL	UG/L					7.1	UJ
		PYRIDINE	UG/L					35	U
Metals	T	ALUMINUM	UG/L					250	J
		ANTIMONY	UG/L					0.34	J
		ARSENIC	UG/L					4	U
		BARIUM	UG/L					28.5	
		BERYLLIUM	UG/L					0.5	U
		CADMIUM	UG/L					3	U
		CALCIUM	UG/L					153,000	
		CHROMIUM, TOTAL	UG/L					3	J
		COBALT	UG/L					4	U
		COPPER	UG/L					35.1	
		IRON	UG/L					573	
		LEAD	UG/L					2.28	
		MAGNESIUM	UG/L					6,780	
		MANGANESE	UG/L					81.8	
		MERCURY	UG/L					0.044	J
		NICKEL	UG/L					1	J
		POTASSIUM	UG/L					5,760	
		SELENIUM	UG/L					0.31	J
		SILVER	UG/L					0.4	U

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July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP4358				SP4667	
			Location	BW12006		FIELDQC		OW07003	
			Sample Date	8/9/2022		8/9/2022		8/23/2022	
			Sample ID	LORNG_BW12006_08092022_K		LORNG_TB09_08092022		LORNG_OW07003_08232022_K	
			QC Code	N		TB		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	T	SODIUM	UG/L					259,000	
		THALLIUM	UG/L					0.25	J
		VANADIUM	UG/L					0.43	J
		ZINC	UG/L					1,570	

Notes:
N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank
UG/L = microgram per liter
UJ = Analyte not detected and repoting limit is estimated
U = Analyte not detected at the associated detection limit
J = Analyte present, concentration is estimated
R = Result is rejected
SVOCs = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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Table 3 - Summay of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97652	M537	T	FA97652-1	LORNG_BW07002_07262022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA97652-2	LORNG_BW07003_07262022	Perfluorohexanoic acid (PFHxA)	235	=	235	J	MSH	NG/L
			FA97652-3	LORNG_OW07002_07262022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
FA97845	M537	T	FA97845-1	LORNG_BW07001_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS, LCL	NG/L
			FA97845-2	LORNG_BW08003_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS, LCL	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
			FA97845-3	LORNG_BW09001_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97845-5	LORNG_OW07001_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	18	=	18	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	J	2.8	J	IAG	NG/L
			FA97845-7	LORNG_OW08001_08022022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA97845-9	LORNG_OW09001_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA97845-10	LORNG_OW20006_08022022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
FA97889	M537	T	FA97889-2	LORNG_BW01006_08032022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
			FA97889-3	LORNG_BW01009_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	5.5	=	5.5	J	RIS	NG/L
			FA97889-4	LORNG_BW02001_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
FA97889	M537	T	FA97889-5	LORNG_BW20002_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L

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Checked by: CLC
Date: 12/15/2022

Table 3 - Summay of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97889	M537	T	FA97889-7	LORNG_OW01002_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	R	RIS	NG/L
			FA97889-8	LORNG_OW01004_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	UJ	RIS	NG/L
			FA97889-9	LORNG_OW20007_08032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
FA97924	M537	T	FA97924-1	LORNG_BW03002_08052022	Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	MSL	NG/L
			FA97924-2	LORNG_OW05004_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA97924-3	LORNG_OW05004_08052022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
FA97927	M537	T	FA97927-1	LORNG_BW02002_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA97927-2	LORNG_BW03001_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	RIS	NG/L
			FA97927-3	LORNG_BW20001_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA97927-4	LORNG_OW02002_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA97927-5	LORNG_OW05002_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97927-6	LORNG_OW05003_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97927-7	LORNG_OW20001_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA97927-8	LORNG_OW20002_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97958	M537	T	FA97958-13	LORNG_BB_BW001_08072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
			FA97958-14	LORNG_BB_OW001_08072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97958-2	LORNG_BW01008_08062022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	4	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97958-3	LORNG_BW05008_08062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	21	U	21	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	21	U	21	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.1	U	2.1	UJ	RIS	NG/L
			FA97958-4	LORNG_BW05009_08062022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	4	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	2	U	2	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	21.3	=	21.3	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	UJ	RIS	NG/L

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Table 3 - Summay of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97958	M537	T	FA97958-5	LORNG_BW05010_08062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97958-15	LORNG_BW16002_08072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	UJ	RIS	NG/L
			FA97958-6	LORNG_BW18007_08062022	4:2 Fluorotelomer sulfonate (4:2 FTS)	4	U	4	UJ	RIS	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	4	U	4	UJ	RIS	NG/L
					8:2 Fluorotelomer sulfonate (8:2 FTS)	4	U	4	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	4	UJ	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	U	2	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4	U	4	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	2	U	2	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	U	2	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	2	U	2	UJ	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.5	J	2.5	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	2	U	2	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	2	U	2	UJ	RIS	NG/L
					Perfluorononanoic acid (PFNA)	2	U	2	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2	U	2	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	2	U	2	UJ	RIS	NG/L

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Checked by: CLC
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Table 3 - Summay of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97958	M537	T	FA97958-6	LORNG_BW18007_08062022	Perfluoropentanesulfonic acid (PFPeS)	2	U	2	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	UJ	RIS	NG/L
			FA97958-7	LORNG_BW18007_08062022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97958-10	LORNG_EBGB_BW002_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA97958-17	LORNG_OW20003_08072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4	U	4	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	74.8	=	74.8	J	CCL	NG/L
FA98003	M537	T	FA98003-1	LORNG_BB_OW002_08092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98003-2	LORNG_BB_OW002_08092022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98003-3	LORNG_BW13001_08092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98003-5	LORNG_EBGB_BW001_08092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
FA98011	M537	T	FA98011-10	LORNG_BB_BW002_08092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98011-1	LORNG_BW10007_08082022	Perfluorobutanoic acid (PFBA)	5.1	J	5.1	J	RIS	NG/L
			FA98011-11	LORNG_BW10008_08092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	22	U	22	UJ	RIS	NG/L
			FA98011-3	LORNG_BW18006_08082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98011-4	LORNG_BW18008_08082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA98011-5	LORNG_BW18009_08082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA98011-6	LORNG_BW18010_08082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA98224	M537	T	FA98224-1	LORNG_OW16002_08162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	RFL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.2	J	2.2	J	RFL	NG/L
FA98255	M537	T	FA98255-1	LORNG_OW23001_08172022	Perfluorobutanoic acid (PFBA)	8.4	=	8.4	J	RIS	NG/L
FA98281	M537	T	FA98281-1	LORNG_BW06008_08172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	R	RIS	NG/L
			FA98281-2	LORNG_OW20004_08182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA98281-3	LORNG_OW20005_08182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
FA98310	M537	T	FA98310-1	LORNG_BW13002_08192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
			FA98310-2	LORNG_BW13002_08192022FD	Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
			FA98310-4	LORNG_GC_BW001_08182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	9.3	U	9.3	UJ	RIS	NG/L
FA98346	M537	T	FA98346-1	LORNG_BW13003_08192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
SP4196	BNASIMD	T	SP4196-1	LORNG_OW08002_08022022_K	INDENO(1,2,3-C,D)PYRENE	0.093	U	0.093	UJ	ICD	UG/L
					PENTACHLOROPHENOL	0.47	U	0.47	UJ	ICD	UG/L
	SW6010C	T	SP4196-1	LORNG_OW08002_08022022_K	CHROMIUM, TOTAL	0.99	J	4	U	CBL	UG/L
	SW6020A	T	SP4196-1	LORNG_OW08002_08022022_K	THALLIUM	0.081	J	0.4	U	CBL	UG/L
	SW7470A	T	SP4196-1	LORNG_OW08002_08022022_K	MERCURY	0.02	J	0.1	U	LBL	UG/L
	SW8260C	T	SP4196-1	LORNG_OW08002_08022022_K	CHLOROMETHANE	0.46	J	1	U	TBL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4196	SW8270D	T	SP4196-1	LORNG_OW08002_08022022_K	2,2'-OXYBIS(1-CHLORO)PROPANE	7	U	7	UJ	SVLL	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					3,3'-DICHLOROBENZIDINE	7	U	7	UJ	SVLL	UG/L
					4-NITROPHENOL	18	ULL	18	UJ	ICD	UG/L
					BENZIDINE	35	U	35	UJ	SVLL	UG/L
					BENZOIC ACID	18	U	18	UJ	SVLL	UG/L
					BENZYL ALCOHOL	7.2	JL	7.2	J	LCH, LCD	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	ULL	7	R	SVLL, LCL, LCD	UG/L
SP4667	SW6010C	T	SP4667-1	LORNG_OW07003_08232022_K	CADMIUM	0.36	J	3	U	LBL	UG/L
	SW8011	T	SP4667-1	LORNG_OW07003_08232022_K	1,2-DIBROMO-3-CHLOROPROPANE	0.024	UL	0.024	UJ	HHL	UG/L
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.024	UL	0.024	UJ	HHL	UG/L
	SW8270D	T	SP4667-1	LORNG_OW07003_08232022_K	2,3,4,6-TETRACHLOROPHENOL	7.1	UL	7.1	R	SGL, LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	SGL	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DICHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DIMETHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2,4-DINITROPHENOL	18	U	18	UJ	SGL	UG/L
					2-CHLOROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7.1	U	7.1	UJ	SGL	UG/L
					2-NITROPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	SGL	UG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP4667	SW8270D	T	SP4667-1	LORNG_OW07003_08232022_K	4-CHLORO-3-METHYLPHENOL	7.1	U	7.1	UJ	SGL	UG/L
					4-NITROPHENOL	18	U	18	UJ	SGL	UG/L
					BENZOIC ACID	18	U	18	UJ	SGL	UG/L
					BENZYL ALCOHOL	14	U	14	UJ	SGL	UG/L
					PHENOL	7.1	U	7.1	UJ	SGL	UG/L

Notes:

J = Concentration is estimated

U = Analyte not detected

UJ = Analyte not detected and considered estimated

R = Result is rejected

CBL = Continuing calibration blank concentration less than the reporting limit

CCL = Continuing calibration standard recovery less than lower control limit

HHL = Holding time exceeded

IAG = Ion abundance ratio outside calculated limits

ICD = Initial calibration relative standard deviation limit exceeded

LBL = Laboratory blank contamination less than reporting limit

LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded

LCL = LCS recovery less than lower control limit

LCH = LCS recovery greater than upper control limit

MSH = MS recovery greater than upper control limit

MSL = MS recovery less than lower control limit

RFL = Signal to noise ratio criteria exceeded

RIS = Extracted internal standard recovery outside control limits

SGL = Surrogate recovery less than lower control limit

SVLL = Second source verification standard recovery less than lower control limit

TBL = Trip blank concentration less than the reporting limit

NG/L = nanogram per liter

UG/L = microgram per liter

Prepared by:AKN
Date:12/13/22
Checked by: CLC
Date: 12/15/2022

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97845	LORNG_OW08001_08022022	LORNG_OW08001_08022022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	12.8		12.1		6	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4	U	4	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	14.7		14.5		1	
				Perfluorobutanoic acid (PFBA) (NG/L)	22.9		23		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	9.3		8.9		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	32.9		32.9		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	357		356		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	84.5		85.1		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	3.3	J	3.3	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	4.3		4.4		2	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	270		264		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	98		98.7		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	20.1		20.2		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	81.7		82		0	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
FA97889	LORNG_BW01006_08032022	LORNG_BW01006_08032022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4	U	4	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.7	J	2.5	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.8	J	3.1	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4		3.6	J	11	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	35		32.2		8	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.2		4		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	26.6		26.7		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	6		5.5		9	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.8	J	2.7	J	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97889	LORNG_BW01006_08032022	LORNG_BW01006_08032022FD	PFAS	Perfluoropentanoic acid (PFPeA) (NG/L)	4.1		4.3		5	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
FA97924	LORNG_OW05004_08052022	LORNG_OW05004_08052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	8.2		8.4		2	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	16.3		16.6		2	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	20	UJ	19	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	6		5.9		2	
				Perfluorobutanoic acid (PFBA) (NG/L)	10.9		10.9		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.3	J	3.4	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	19.2		19.5		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	83.3		79.9		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	12.9		13.5		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2.4	J	2.4	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	1.3	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	252		235		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	13.8		13.8		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8.1		10.4		25	
				Perfluoropentanoic acid (PFPeA) (NG/L)	20		20.7		3	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	1.9	U	NC	
FA97958	LORNG_BW18007_08062022	LORNG_BW18007_08062022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	UJ	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	UJ	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	UJ	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	UJ	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4	R	3.7	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	UJ	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4	UJ	2.3	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	UJ	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.5	J	2.7	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2	UJ	1	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	UJ	1.9	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97958	LORNG_BW18007_08062022	LORNG_BW18007_08062022FD	PFAS	Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2	UJ	2.4	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	2	UJ	1.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2	UJ	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	UJ	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	UJ	1.9	U	NC	
FA98003	LORNG_BB_OW002_08092022	LORNG_BB_OW002_08092022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	19	UJ	4	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	2	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	4	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.1	J	2	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.9	U	2	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.9	U	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
FA98011	LORNG_WBGB_BW001_08082022	LORNG_WBGB_BW001_08082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	U	19	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	J	1.1	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.9	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA98011	LORNG_WBGB_BW001_08082022	LORNG_WBGB_BW001_08082022FD	PFAS	Perfluorohexanesulfonic acid (PFHxS) (NG/L)	4.6		4.7		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.1	J	2.1	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3.5	J	3.9		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.2	J	1.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.1	J	1.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	J	1.9	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
FA98310	LORNG_BW13002_08192022	LORNG_BW13002_08192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	21		21.5		2	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.7	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.7	UJ	3.7	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.3	J	3.4	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.6	J	1.6	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.3	J	2.3	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.3	J	3.3	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.9	J	1.9	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.2		5.3		2	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
SP4244	LORNG_BW01006_08032022_K	LORNG_BW01006_08032022FD_K	Metals	MANGANESE (UG/L)	4.3	J	4.3	J	NC	

Notes:
1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
ng/L = nanograms per liter
RPD = relative percent difference
SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations

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Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
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Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_BW16002_08072022	FA97958	2208180	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.8	U	2	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.8	U	2	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.8	U	2	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.8	U	2	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	UJ	2	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.8	U	2	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.9	U	2	U	NC
			Perfluorobutanoic acid (PFBA)	3.8	U	2	U	NC
			Perfluorodecane sulfonate (PFDS)	1.9	U	2	U	NC
			Perfluorodecanoic acid (PFDA)	1.9	U	2	U	NC
			Perfluorododecanoic acid (PFDoA)	1.9	U	2	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	2	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.9	U	2	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.14	J	NC
			Perfluorohexanoic acid (PFHxA)	1.3	J	1.25	J	NC
			Perfluorononanesulfonic acid (PFNS)	1.9	U	2	U	NC
			Perfluorononanoic acid (PFNA)	1.9	U	2	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.67	J	NC
			Perfluorooctanesulfonic acid (PFOS)	1.9	U	2	U	NC
			Perfluorooctanoic acid (PFOA)	1.9	U	2	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.9	U	2	U	NC
			Perfluoropentanoic acid (PFPeA)	1.8	J	1.16	J	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	2	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	2	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.9	U	2	U	NC
LORNG_OW17002_08162022	FA98224	2208238	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	1.99	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	1.99	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	1.99	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	1.99	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	1.99	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	1.99	U	NC
			Perfluorobutanesulfonic acid (PFBS)	2	J	1.54	J	NC
			Perfluorobutanoic acid (PFBA)	13.7		12.3		11
			Perfluorodecane sulfonate (PFDS)	1.9	U	1.99	U	NC
			Perfluorodecanoic acid (PFDA)	1.9	U	1.99	U	NC
			Perfluorododecanoic acid (PFDoA)	1.9	U	1.99	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.99	U	NC
			Perfluoroheptanoic acid (PFHpA)	15.7		14.9		5
			Perfluorohexanesulfonic acid (PFHxS)	29.1		29.2		0

Created By: CLC 12/14/2022
Checked By: JAR 3/9/2023

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - August 2022 New Wells Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_OW17002_08162022	FA98224	2208238	Perfluorohexanoic acid (PFHxA)	18.3		18.4		1
			Perfluorononanesulfonic acid (PFNS)	1.9	U	1.99	U	NC
			Perfluorononanoic acid (PFNA)	1.1	J	1.99	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.37	J	NC
			Perfluorooctanesulfonic acid (PFOS)	39.4		32		21
			Perfluorooctanoic acid (PFOA)	10.2		9.24		10
			Perfluoropentanesulfonic acid (PFPeS)	2.9	J	1.67	J	NC
			Perfluoropentanoic acid (PFPeA)	35.5		33.5		6
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.99	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.99	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.99	U	NC

Notes:
No data qualifiers were applied to field sample results based on split sample comparison.
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group
ug/kg = micrograms per kilogram

Created By: CLC 12/14/2022
Checked By: JAR 3/9/2023

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Residential samples were collected at the Former Loring Air Force Base in Limestone, Maine, in July - October 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 39 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

A duplicate of groundwater LORNG_LF2RESD_WH_08162022 was collected and submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as an interlaboratory comparison assessment sample. Vista analyzed one sample for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018),, and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

RIS = Extracted internal standard recovery outside control limits
RFL = Signal-to-noise ratio less than QC limits

Interlaboratory split sample LORNG_LF2RESD_WH_08162022SPLIT was submitted to Vista as an additional quality assurance step. Data validation was not planned for Vista data unless gross deviations were observed. Split sample results for perfluorooctane sulfonamide (PFOSA) in residential sample LORNG_LF2RESD_WH_08162022 showed a gross difference in results between the primary laboratory SGS Orlando and the split sample laboratory Vista. SGS reported PFOSA as not detected at 1.9 U ng/L and Vista reported a detection well above the LOQ at 89.5 ng/L. Available laboratory data were reviewed by WSP to identify a possible cause for the difference in results, and both labs were requested to complete an additional review of data to determine if a reporting error had occurred. During the WSP review it was noted that in the liquid chromatography dual mass spectrometry method (LC/MS/MS Table B-15 of QSM V

5.3) used by the laboratories, the transition ions used for this compound are different between SGS and Vista. The transition ions for PFOSA are not specified in Table B-15 of QSM V 5.3. PFOSA is included in Method 1633 and the primary and secondary ions being used by SGS match those identified in Method 1633 (77.9 and 478.0). For Vista, the nominal mass assigned to the primary ion (77.4) and the secondary transition ion used by Vista (168.7) are different from those specified in Method 1633. During the review, SGS provided additional mass chromatograms for the primary and secondary ions used to quantify PFOSA. The chromatograms confirmed that PFOSA was not present above the method detection limit in the analytical run. Vista completed a review of the result based on their current methodology and indicated that the peak selection, quantification and rejection requirements for PFOSA met all criteria. Based on these reviews the differences in reporting for PFOSA is interpreted to possibly be due to variations in the analytical methods and possible sample specific matrix interactions with the result provided by Vista. The SGS result for PFOSA is interpreted to be usable as reported by the laboratory.

Results for LORNG_LF2RESD_WH_08162022SPLIT are presented in this report to complete the interlaboratory comparison only and are not included in the final data set of the Loring RI sampling program and not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6. An evaluation of split sample results is presented in Section 2.1.3.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS
The non-detect result for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in sample LORNG_RES21_10262022 was qualified as rejected (R) based on extracted internal standard (EIS) percent recovery less than the DoD PFAS validation guideline limit of 20.

Low concentration detections of perfluorooctanesulfonic acid were qualified estimated (J) in twosamples based on signal-to-noise ratios exceeding QC limits. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for EIS recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 975 individual PFAS results reported for the groundwater event, a total of one result was qualified as rejected (R) and is interpreted to be unusable for project objectives. This represents a PFAS data completeness of 99.9% for the residential data set.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field/Lab Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Extracted Internal Standard Recovery

The extracted internal standard (EIS) percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

The non-detect result for N-MeFOSA in sample LORNG_RES21_10262022 was qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20.

The non-detect result or 4:2 fluorotelomer sulfonate (4:2 FTS) in sample LORNG_RES21_10262022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

The non-detect results for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_LWTF-EFF_07252022
LORNG_LWTF-INF_07252022
LORNG_EGRESD_WH_07252022
LORNG_USFW-01_07252022FD
LORNG_RRRRESD_WH_08042022
LORNG_GC_01_08042022

The non-detect results for N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) in samples LORNG_RES22_09292022FD and LORNG_RES26_10132022 were qualified as estimated (UJ) based on an EIS percent recovery less than 50.

The non-detect result for perfluorobutanoic acid (PFBA) in sample LORNG_RES21_10262022 was qualified as estimated (UJ) based on an EIS percent recovery less than 50.

The non-detect results for perfluorododecanoic acid (PFDoA) and perfluorotridecanoic acid (PFTrDA) in samples LORNG_RES24_09292022, LORNG_RES33_09292022, and LORNG_RES26_10132022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The non-detect result for perfluoroheptanoic acid (PFHpA), perfluorohexanoic acid (PFHxA), perfluoropentanoic acid (PFPeA), and PFOSA in sample LORNG_RES21_10262022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The on-detect results for perfluorotetradecanoic acid (PFTeDA) in samples LORNG_RES26_10132022 and LORNG_RES21_10262022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

2.1.2 Miscellaneous

The signal-to-noise ratio for PFOS in samples LORNG_LSTWELLB_07252022 and LORNG_LWTF-INF_07252022 were less than the QC limit of 10. The PFOS results in the affected samples were qualified estimated (J).

2.1.3 Interlaboratory Split Samples

One interlaboratory split sample was collected in association with the following residential sample:

LORNG_LF2RESD_WH_08162022

A summary of split sample results is presented on Table 6. Comparison criteria are established in QPP Appendix E. The majority of PFAS target compounds were not detected in the sample. With the exception of PFOSA, PFAS compounds that were detected showed general agreement between results reported by SGS and Vista. Split sample results for perfluorooctane sulfonamide PFOSA in residential sample LORNG_LF2RESD_WH_08162022 showed a gross difference in results between the primary laboratory SGS Orlando and the split sample laboratory Vista. SGS reported PFOSA as not detected at 1.9 U ng/L and Vista reported a detection well above the LOQ at 89.5 ng/L. Available laboratory data were reviewed by WSP to identify a possible cause for the difference in results, and both labs were requested to complete an additional review of data to determine if a reporting error had occurred. During the WSP review it was noted that in the liquid chromatography dual mass spectrometry method (LC/MS/MS Table B-15 of QSM V 5.3) used by the laboratories, the transition ions used for this compound are different between SGS and Vista. The transition ions for PFOSA are not specified in Table B-15 of QSM V 5.3. PFOSA is included in Method 1633 and the primary and secondary ions being used by SGS match those identified in Method 1633 (77.9 and 478.0). For Vista, the nominal mass assigned to the primary ion (77.4) and the secondary transition ion used by Vista (168.7) are different from those specified in Method 1633. During the review, SGS provided additional mass chromatograms for the primary and secondary ions used to quantify PFOSA. The chromatograms confirmed that PFOSA was not present above the method detection limit in the analytical run. Vista completed a review of the result based on their current methodology and indicated that the peak selection, quantification and rejection requirements for PFOSA met all criteria. Based on these reviews the difference in reporting for PFOSA is interpreted to possibly be due to variations in the analytical methods and possible sample specific matrix interactions with the result provided by Vista. The SGS result for PFOSA is interpreted to be usable as reported by the laboratory. Results for the split samples analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data set.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



January 10, 2023

Reviewed by: Julie Ricardi



March 13, 2023

Table 1 - Summary of Samples and Analytical Methods
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	LC/MS/MS[1]
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FA97604	LORNG-LST-WELLA	LORNG_LSTWELLA_07252022	FA97604-1	7/25/2022	WP	N	25
	LORNG-LST-WELLB	LORNG_LSTWELLB_07252022	FA97604-2	7/25/2022	WP	N	25
	LORNG-LWTF-EFF	LORNG_LWTF-EFF_07252022	FA97604-3	7/25/2022	WP	N	25
	LORNG-LWTF-INF	LORNG_LWTF-INF_07252022	FA97604-4	7/25/2022	WP	N	25
FA97653	ANWR01	LORNG_ANWR-01_07252022	FA97653-5	7/25/2022	WP	N	25
	ANWR02	LORNG_ANWR-02_07252022	FA97653-3	7/25/2022	WP	N	25
	EGRESD	LORNG_EGRESD_WH_07252022	FA97653-4	7/25/2022	WP	N	25
	USFW01	LORNG_USFW-01_07252022	FA97653-1	7/25/2022	WP	N	25
		LORNG_USFW-01_07252022FD	FA97653-2	7/25/2022	WP	FD	25
FA97890	RRRESD	LORNG_RRRRESD_WH_08042022	FA97890-1	8/4/2022	WP	N	25
FA97928	GC_01	LORNG_GC_01_08042022	FA97928-1	8/4/2022	WG	N	25
		LORNG_GC_01_08042022FD	FA97928-2	8/4/2022	WG	FD	25
FA98222	LF2RESD-WH	LORNG_LF2RESD_WH_08162022	FA98222-1	8/16/2022	WP	N	25
FA99482	RES07	LORNG_RES07_09282022	FA99482-13	9/28/2022	WP	N	25
	RES08	LORNG_RES08_09272022	FA99482-1	9/27/2022	WP	N	25
	RES09	LORNG_RES09_09272022	FA99482-2	9/27/2022	WP	N	25
		LORNG_RES09_09272022FD	FA99482-26	9/27/2022	WP	FD	25
	RES10	LORNG_RES10_09272022	FA99482-3	9/27/2022	WP	N	25
	RES11	LORNG_RES11_09282022	FA99482-14	9/28/2022	WP	N	25
	RES14	LORNG_RES14_09272022	FA99482-6	9/27/2022	WP	N	25
	RES15	LORNG_RES15_09282022	FA99482-7	9/28/2022	WP	N	25
	RES18	LORNG_RES18_09272022	FA99482-8	9/27/2022	WP	N	25
	RES20	LORNG_RES20_09272022	FA99482-9	9/27/2022	WP	N	25
	RES22	LORNG_RES22_09292022	FA99482-15	9/29/2022	WP	N	25
		LORNG_RES22_09292022FD	FA99482-16	9/29/2022	WP	FD	25
	RES24	LORNG_RES24_09292022	FA99482-17	9/29/2022	WP	N	25
	RES27	LORNG_RES27_09292022	FA99482-18	9/29/2022	WP	N	25
	RES28	LORNG_RES28_09292022	FA99482-19	9/29/2022	WP	N	25
	RES29	LORNG_RES29_09292022	FA99482-20	9/29/2022	WP	N	25
	RES30	LORNG_RES30_09292022	FA99482-21	9/29/2022	WP	N	25
		LORNG_RES30_09292022FD	FA99482-22	9/29/2022	WP	FD	25
	RES31	LORNG_RES31_09292022	FA99482-23	9/29/2022	WP	N	25
	RES32	LORNG_RES32_09282022	FA99482-10	9/28/2022	WP	N	25
	RES33	LORNG_RES33_09292022	FA99482-25	9/29/2022	WP	N	25
	RES34	LORNG_RES34_09292022	FA99482-24	9/29/2022	WP	N	25
	RES38	LORNG_RES38_09282022	FA99482-11	9/28/2022	WP	N	25
	RES39	LORNG_RES39_09282022	FA99482-12	9/28/2022	WP	N	25
FA99807	RES26	LORNG_RES26_10132022	FA99807-1	10/13/2022	WP	N	25
FC166	RES21	LORNG_RES21_10262022	FC166-1	10/26/2022	WP	N	25

Notes:

[1] = Analysis Method is LC/MS/MS compliant with Table B-15 of the DoD QSM, version 5.3.

LC/MS/MS = Liquid Chromatography Tandem Mass Spectrometry

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

ParamCount = Number of target analytes reported

PFAS = Per- and Polyfluoroalkyl Substance

Samples were subjected to Stage 2B Data Validation.

Shaded parameter counts were subjected to Stage 4 Data Validation

Prepared by:AKN
Date:1/6/23
Checked by: CLC
Date: 1/10/2023

Table 2 - Summary of Analytical Results
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA97604				FA97653			
Location				LORNG-LST-WELLA	LORNG-LST-WELLB	LORNG-LWTF-EFF	LORNG-LWTF-INF	ANWR01	ANWR02	EGRESD	USFW01
Sample Date				7/25/2022	7/25/2022	7/25/2022	7/25/2022	7/25/2022	7/25/2022	7/25/2022	7/25/2022
Sample ID				LORNG_LSTWELLA_07252022	LORNG_LSTWELLB_07252022	LORNG_LWTF-EFF_07252022	LORNG_LWTF-INF_07252022	LORNG_ANWR-01_07252022	LORNG_ANWR-02_07252022	LORNG_EGRESD_WH_07252022	LORNG_USFW-01_07252022
QC Code				N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 U	4 U	4 UJ	4 UJ	4.1 U	4 U	4 UJ	4 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	4 U	4 U	4 U	4.1 U	4 U	4 U	4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	1.3 J	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	2 J	2 U	2 U	5.4	18.8	2 U	8.3
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	2 U	2 U	2 U	2 U	1.2 J	1.5 J	1.3 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	2 J	2 J	2 U	2 U	2 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 U	2.2 J	1.1 J	1.2 J	5.6	18.5	1.3 J	20.3
		Perfluorooctanoic acid (PFOA)	NG/L	2 U	2 U	2 U	2 U	2 U	1.9 J	3.2 J	1.9 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2 U	2 U	2 U	2 U	1 J	2 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 U	2 U	2 U	2 U	2 U	1.1 J	2 J	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:
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U = Analyte not detected at the associated detection limits
UJ = Analyte not detected; reporting limits estimated
R = Result is unusable
NG/L = Nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/6/23
Checked by: CLC
Date: 1/10/2023

Table 2 - Summary of Analytical Results
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97653		FA97890		FA97928		FA98222		FA99482			
			Location	USFW01		RRRESD		GC_01		LF2RESD-WH		RES07		RES08	
			Sample Date	7/25/2022		8/4/2022		8/4/2022		8/16/2022		9/28/2022		9/27/2022	
			Sample ID	LORNG_USFW-01_07252022FD		LORNG_RRRRESD_WH_08042022		LORNG_GC_01_08042022		LORNG_GC_01_08042022FD		LORNG_LF2RESD_WH_08162022		LORNG_RES07_09282022		LORNG_RES08_09272022	
			QC Code	FD		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4	UJ	19	UJ	3.7	UJ	3.7	U	3.7	U	3.7	U	3.7	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.3	J	1.9	U
		Perfluorobutanoic acid (PFBA)	NG/L	4	U	3.7	U	3.7	U	3.7	U	2.1	J	3.7	U	3.7	U
		Perfluorodecane sulfonate (PFDS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.9		5.3		1.9	U	1.9	U	5		10.5		1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.3	J	1.9	U	1.9	U	1.9	U	1.6	J	1.6	J	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19.9		4.4		1.9	U	1.9	U	7.5		40.4		1.4	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	J	1.9	U	1.9	U	1.9	U	2.5	J	1.9	J	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.3	J	1.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.3	J	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

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NG/L = Nanograms per liter
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Prepared by: AKN
Date: 1/6/23
Checked by: CLC
Date: 1/10/2023

Table 2 - Summary of Analytical Results
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA99482											
Location				RES09		RES10		RES11		RES14		RES15		RES18		RES20	
Sample Date				9/27/2022		9/27/2022		9/28/2022		9/27/2022		9/28/2022		9/27/2022		9/27/2022	
Sample ID				LORNG_RES09_09272022		LORNG_RES09_09272022FD		LORNG_RES10_09272022		LORNG_RES11_09282022		LORNG_RES14_09272022		LORNG_RES15_09282022		LORNG_RES18_09272022		LORNG_RES20_09272022	
QC Code				N		FD		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U		1.8 U		1.9 U		1.5 J		1.9 U		1.9 U		1.9 U	
		Perfluorobutanoic acid (PFBA)	NG/L	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U		1.8 U		1.9 U		1.2 J		1.9 U		1.9 U		1.9 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.8		3.7		2 J		10.4		1.8 J		1.9 U		1.9 U	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U		1.1 J		1.9 U		1.3 J		0.94 J		1.9 U		1.9 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	11.5		13.7		4		29		5.7		1.2 J		1.9 U	
		Perfluorooctanoic acid (PFOA)	NG/L	1.4 J		1.5 J		1.9 U		1.7 J		1.4 J		1.9 U		1.9 U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U		1.8 U		1.9 U		1.4 J		1.9 U		1.9 U		1.9 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	0.98 J		1.1 J		1.9 U		1.6 J		1.2 J		1.9 U		1.9 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U	

Notes:

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Date: 1/6/23
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Table 2 - Summary of Analytical Results
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA99482									
Location				RES22		RES24	RES27	RES28	RES29	RES30			
Sample Date				9/29/2022		9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022			
Sample ID				LORNG_RES22_09292022	LORNG_RES22_09292022FD	LORNG_RES24_09292022	LORNG_RES27_09292022	LORNG_RES28_09292022	LORNG_RES29_09292022	LORNG_RES30_09292022	LORNG_RES30_09292022FD		
QC Code				N	FD	N	N	N	N	N	FD		
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.6	UJ	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	0.94	J
		Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.8	UJ	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.8	UJ	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U

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Date: 1/6/23
Checked by: CLC
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Table 2 - Summary of Analytical Results
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA99482										FA99807		FC166	
		Location		RES31		RES32		RES33		RES34		RES38		RES39		RES26		RES21	
		Sample Date		9/29/2022		9/28/2022		9/29/2022		9/29/2022		9/28/2022		9/28/2022		10/13/2022		10/26/2022	
		Sample ID		LORNG_RES31_09292022		LORNG_RES32_09282022		LORNG_RES33_09292022		LORNG_RES34_09292022		LORNG_RES38_09282022		LORNG_RES39_09282022		LORNG_RES26_10132022		LORNG_RES21_10262022	
		QC Code		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.6	UJ
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.6	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.6	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.6	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	18	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	UJ	3.6	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	10		1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.6	U	3.6	UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.8	UJ	1.8	U	1.9	U	1.9	U	1.8	UJ	1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	UJ
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	UJ
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.6	J	1.8	U	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.3	J	1.8	U	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	UJ	1.8	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.8	UJ	1.8	U	1.9	U	1.9	U	1.8	UJ	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U

Notes:
N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank
J = Analyte present; the reported value may not be accurate or precise
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected; reporting limits estimated
R = Result is unusable
NG/L = Nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 1/6/23
Checked by: CLC
Date: 1/10/2023

Table 3 - Summary of Data Validation Actions
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97604	LC/MS/MS	T	FA97604-2	LORNG_LSTWELLB_07252022	Perfluorooctanesulfonic acid (PFOS)	2.2	J	2.2	J	RFL	NG/L
			FA97604-3	LORNG_LWTF-EFF_07252022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA97604-4	LORNG_LWTF-INF_07252022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.2	J	RFL	NG/L
FA97653	LC/MS/MS	T	FA97653-4	LORNG_EGRESD_WH_07252022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA97653-2	LORNG_USFW-01_07252022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
FA97890	LC/MS/MS	T	FA97890-1	LORNG_RRRRESD_WH_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
FA97928	LC/MS/MS	T	FA97928-1	LORNG_GC_01_08042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	UJ	RIS	NG/L
FA99482	LC/MS/MS	T	FA99482-16	LORNG_RES22_09292022FD	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.6	U	3.6	UJ	RIS	NG/L
			FA99482-17	LORNG_RES24_09292022	Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA99482-25	LORNG_RES33_09292022	Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
FA99807	LC/MS/MS	T	FA99807-1	LORNG_RES26_10132022	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L

Prepared by:AKN
Date:1/6/23
Checked by: CLC
Date: 1/10/2023

Table 3 - Summary of Data Validation Actions
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC166	LC/MS/MS	T	FC166-1	LORNG_RES21_10262022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Result is estimated

UJ = Analyte not detected; reporting limits estimated

R = Result is unusable

NG/L = Nanograms per liter

RFL = Signal-to-noise ratio less than 10

CFHD = Split sample RPD greater than QC limis

RIS = Extracted internal standard outside of acceptance limits

Prepared by:AKN
Date:1/6/23
Checked by: CLC
Date: 1/10/2023

Table 4 - Field Duplicate RPD Summary
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Analyte	Sample Result (ng/L)	Sample Qualifier	Duplicate Result (ng/L)	Duplicate Qualifier	RPD[1]	Flag
FA97653	LORNG_USFW-01_07252022	LORNG_USFW-01_07252022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	4	U	4	U	NC	
			6:2 Fluorotelomer sulfonate (6:2 FTS)	4	U	4	U	NC	
			8:2 Fluorotelomer sulfonate (8:2 FTS)	4	U	4	U	NC	
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	U	NC	
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	NC	
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4	U	4	U	NC	
			Perfluorobutanesulfonic acid (PFBS)	2	U	2	U	NC	
			Perfluorobutanoic acid (PFBA)	4	U	4	U	NC	
			Perfluorodecane sulfonate (PFDS)	2	U	2	U	NC	
			Perfluorodecanoic acid (PFDA)	2	U	2	U	NC	
			Perfluorododecanoic acid (PFDoA)	2	U	2	U	NC	
			Perfluoroheptanesulfonic acid (PFHpS)	2	U	2	U	NC	
			Perfluoroheptanoic acid (PFHpA)	2	U	2	U	NC	
			Perfluorohexanesulfonic acid (PFHxS)	8.3		7.9		5	
			Perfluorohexanoic acid (PFHxA)	1.3	J	1.3	J	NC	
			Perfluorononanesulfonic acid (PFNS)	2	U	2	U	NC	
			Perfluorononanoic acid (PFNA)	2	U	2	U	NC	
			Perfluorooctane sulfonamide (PFOSA)	2	U	2	U	NC	
			Perfluorooctanesulfonic acid (PFOS)	20.3		19.9		2	
			Perfluorooctanoic acid (PFOA)	1.9	J	1.9	J	NC	
			Perfluoropentanesulfonic acid (PFPeS)	2	U	2	U	NC	
			Perfluoropentanoic acid (PFPeA)	2	U	2	U	NC	
			Perfluorotetradecanoic acid (PFTeDA)	2	U	2	U	NC	
			Perfluorotridecanoic acid (PFTrDA)	2	U	2	U	NC	
			Perfluoroundecanoic acid (PFUnA)	2	U	2	U	NC	
FA97928	LORNG_GC_01_08042022	LORNG_GC_01_08042022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	3.7	U	NC	
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	3.7	U	NC	
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	3.7	U	NC	
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.7	U	NC	
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	UJ	3.7	U	NC	
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	3.7	U	NC	
			Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	U	NC	
			Perfluorobutanoic acid (PFBA)	3.7	U	3.7	U	NC	
			Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	U	NC	
			Perfluorodecanoic acid (PFDA)	1.9	U	1.9	U	NC	
			Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	U	NC	
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.9	U	NC	
			Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	U	NC	
			Perfluorohexanesulfonic acid (PFHxS)	1.9	U	1.9	U	NC	
			Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	U	NC	

Prepared by: AKN 1/6/23
Checked by: CLC 1/10/23

Table 4 - Field Duplicate RPD Summary
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Analyte	Sample Result (ng/L)	Sample Qualifier	Duplicate Result (ng/L)	Duplicate Qualifier	RPD[1]	Flag
FA97928	LORNG_GC_01_08042022	LORNG_GC_01_08042022FD	Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	U	NC	
			Perfluorononanoic acid (PFNA)	1.9	U	1.9	U	NC	
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	U	NC	
			Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	U	NC	
			Perfluorooctanoic acid (PFOA)	1.9	U	1.9	U	NC	
			Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	U	NC	
			Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	U	NC	
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	U	NC	
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	U	NC	
			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	U	NC	
FA99482	LORNG_RES09_09272022	LORNG_RES09_09272022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	3.6	U	NC	
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	3.6	U	NC	
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	3.6	U	NC	
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.6	U	NC	
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.6	U	NC	
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	3.6	U	NC	
			Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.8	U	NC	
			Perfluorobutanoic acid (PFBA)	3.7	U	3.6	U	NC	
			Perfluorodecane sulfonate (PFDS)	1.9	U	1.8	U	NC	
			Perfluorodecanoic acid (PFDA)	1.9	U	1.8	U	NC	
			Perfluorododecanoic acid (PFDoA)	1.9	U	1.8	U	NC	
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.8	U	NC	
			Perfluoroheptanoic acid (PFHpA)	1.9	U	1.8	U	NC	
			Perfluorohexanesulfonic acid (PFHxS)	3.8		3.7		3	
			Perfluorohexanoic acid (PFHxA)	1.9	U	1.1	J	NC	
			Perfluorononanesulfonic acid (PFNS)	1.9	U	1.8	U	NC	
			Perfluorononanoic acid (PFNA)	1.9	U	1.8	U	NC	
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.8	U	NC	
			Perfluorooctanesulfonic acid (PFOS)	11.5		13.7		17	
			Perfluorooctanoic acid (PFOA)	1.4	J	1.5	J	NC	
			Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.8	U	NC	
			Perfluoropentanoic acid (PFPeA)	0.98	J	1.1	J	NC	
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.8	U	NC	
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.8	U	NC	
			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.8	U	NC	

Table 4 - Field Duplicate RPD Summary
Data Validation and Usability Report
Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Analyte	Sample Result (ng/L)	Sample Qualifier	Duplicate Result (ng/L)	Duplicate Qualifier	RPD[1]	Flag
FA99482	LORNG_RES22_09292022	LORNG_RES22_09292022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	U	NC	
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.6	U	3.6	U	NC	
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	3.6	U	NC	
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	3.6	U	NC	
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	U	NC	
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.6	U	3.6	UJ	NC	
			Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	U	NC	
			Perfluorobutanoic acid (PFBA)	3.6	U	3.6	U	NC	
			Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	U	NC	
			Perfluorodecanoic acid (PFDA)	1.8	U	1.8	U	NC	
			Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	U	NC	
			Perfluoroheptanesulfonic acid (PFHpS)	1.8	U	1.8	U	NC	
			Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	U	NC	
			Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	U	NC	
			Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	U	NC	
			Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	U	NC	
			Perfluorononanoic acid (PFNA)	1.8	U	1.8	U	NC	
			Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	U	NC	
			Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	U	NC	
			Perfluorooctanoic acid (PFOA)	1.8	U	1.8	U	NC	
			Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	U	NC	
			Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	U	NC	
			Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	U	NC	
			Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	U	NC	
			Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	U	NC	
	LORNG_RES30_09292022	LORNG_RES30_09292022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	3.6	U	NC	
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	3.6	U	NC	
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	3.6	U	NC	
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	3.6	U	NC	
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.6	U	NC	
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	3.6	U	NC	
			Perfluorobutanesulfonic acid (PFBS)	1.9	U	0.94	J	NC	
			Perfluorobutanoic acid (PFBA)	3.7	U	3.6	U	NC	
			Perfluorodecane sulfonate (PFDS)	1.9	U	1.8	U	NC	
			Perfluorodecanoic acid (PFDA)	1.9	U	1.8	U	NC	
			Perfluorododecanoic acid (PFDoA)	1.9	U	1.8	U	NC	
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.8	U	NC	
			Perfluoroheptanoic acid (PFHpA)	1.9	U	1.8	U	NC	
			Perfluorohexanesulfonic acid (PFHxS)	1.9	U	1.8	U	NC	
			Perfluorohexanoic acid (PFHxA)	1.9	U	1.8	U	NC	

Prepared by: AKN 1/6/23
Checked by: CLC 1/10/23

Table 4 - Field Duplicate RPD Summary
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Analyte	Sample Result (ng/L)	Sample Qualifier	Duplicate Result (ng/L)	Duplicate Qualifier	RPD[1]	Flag
FA99482	LORNG_RES30_09292022	LORNG_RES30_09292022FD	Perfluorononanesulfonic acid (PFNS)	1.9	U	1.8	U	NC	
			Perfluorononanoic acid (PFNA)	1.9	U	1.8	U	NC	
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.8	U	NC	
			Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.8	U	NC	
			Perfluorooctanoic acid (PFOA)	1.9	U	1.8	U	NC	
			Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.8	U	NC	
			Perfluoropentanoic acid (PFPeA)	1.9	U	1.8	U	NC	
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.8	U	NC	
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.8	U	NC	
			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.8	U	NC	

Notes:
1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
ng/L = nanograms per liter
RPD = relative percent difference
SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations
Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Wood	Wood Environment & Infrastructure Solutions, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
July - October 2022 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ng/L)	Qualifier	Secondary (ng/L)	Qualifier	RPD
LORNG_LF2RESD_WH_08162022	FA98222	2208238	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.7	U	1.98	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	U	1.98	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	3.7	U	1.98	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.7	U	1.98	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	1.98	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	3.7	U	1.98	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.98	U	NC
			Perfluorobutanoic acid (PFBA)	2.1	J	2.17	J	NC
			Perfluorodecane sulfonate (PFDS)	1.9	U	1.98	U	NC
			Perfluorodecanoic acid (PFDA)	1.9	U	1.98	U	NC
			Perfluorododecanoic acid (PFDoA)	1.9	U	1.98	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.98	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.9	U	1.47	J	NC
			Perfluorohexanesulfonic acid (PFHxS)	5		4.88		1
			Perfluorohexanoic acid (PFHxA)	1.6	J	1.49	J	NC
			Perfluorononanesulfonic acid (PFNS)	1.9	U	1.98	U	NC
			Perfluorononanoic acid (PFNA)	1.9	U	1.98	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.9	U	89.5		NC
			Perfluorooctanesulfonic acid (PFOS)	7.5		7.53		0
			Perfluorooctanoic acid (PFOA)	2.5	J	10.6		NC
			Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.98	U	NC
			Perfluoropentanoic acid (PFPeA)	1.3	J	1.98	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.98	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.98	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.9	U	1.98	U	NC

Notes:
No data qualifiers were applied to field sample results based on split sample comparison.
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group

Created By: CLC 12/14/2022
Checked By: JAR 3/13/2023

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Stormwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, in June and August 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, as summarized below.

SGS analyzed 42 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

IAG = Ion abundance ratio outside calculated limits
LCH = LCS recovery greater than upper control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in 32 samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Affected samples and associated qualified results are summarized in Table 3. Results for N-MeFOSA in the affected samples are considered unusable for project objectives.

Non-detect results for perfluorooctane sulfonamide (PFOSA) in samples LORNG_ST05003_06142022FD and LORNG_ST18008_06162022 were qualified as rejected (R) based on EIS percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for PFOSA in the affected samples are considered unusable for project objectives.

Non-detect results for perfluorotetradecanoic acid (PFTeDA) in samples LORNG_ST05003_06142022 and LORNG_ST20001_06182022 were qualified as rejected (R) based on based on EIS percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for PFTeDA in the affected samples are considered unusable for project objectives.

PFAS detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for LCS recovery, EIS recovery, and/or transition ion ratio. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for MS/MSD recovery, MS/MSD relative percent difference (RPD), and/or EIS recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 1,050 individual PFAS results reported for the 2022 Stormwater event, a total of 36 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a completeness of 97% for the Stormwater data set.

Laboratory reporting limits (RLs) and method detection limits (MDLs) for all samples in the 2022 Stormwater events are less than the Project Action levels (PALs) identified in the QAPP.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning

LCS
MS/MSD
* Field Duplicates
Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
Miscellaneous

* QC criteria were met for this parameter.

2.1.1 LCS

Results for PFHpS in samples LORNG_ST18013_06162022 and LORNG_ST21001_06162022 were qualified estimated (J) based on laboratory control sample percent recovery (138) greater than the upper project QC limit (134).

Results for PFPeA in the following samples were qualified estimated (J) based on laboratory control sample percent recovery (131) greater than the upper project QC limit (129).

LORNG_ST17000_06162022
LORNG_ST18003_06162022
LORNG_ST18007_06162022
LORNG_ST18013_06152022
LORNG_ST21001_06162022
LORNG_ST23002_06162022
LORNG_ST23003_06162022
LORNG_ST24001_06162022

2.1.2 MS/MSD

The non-detect result for perfluorodecane sulfonate (PFDS) in sample LORNG_C1_ST_06142022 was qualified estimated (UJ) based on matrix spike percent recovery (47) less than the lower project QC limit (53) and matrix spike/matrix spike duplicate relative percent difference (40) greater than the project limit (30).

The non-detect result for PFNS in sample LORNG_C1_ST_05142022 was qualified estimated (UJ) based on matrix spike percent recovery (68) less than the lower project QC limit (69).

2.1.3 Extracted Internal Standard Recovery

The extracted internal standard (EIS) percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS percent recoveries between 20 and 50

are qualified as estimated (UJ). Results for non-detected target compounds with EIS percent recoveries less than 20 were qualified as rejected (R) and are considered unusable for project objectives.

Non-detect results for 4:2 fluorotelomer sulfonate (4:2 FTS) in samples LORNG_ST05003_06142022FD, LORNG_ST18007_06162022, and LORNG_ST18013_06162022 were qualified estimated (UJ) based on EIS percent recoveries less than 50.

The non-detect result for 6:2 fluorotelomer sulfonate (6:2 FTS) in sample LORNG_ST18007_06162022 was qualified estimated (UJ) based on EIS percent recovery less than 50.

The non-detect result for 8:2 fluorotelomer sulfonate (8:2 FTS) in sample LORNG_ST18007_06162022 was qualified estimated (UJ) based on EIS percent recovery less than 50.

Non-detect results for n-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) in samples LORNG_ST16001_06162022, LORNG_ST18007_06162022, and LORNG_ST18008_06162022 were qualified estimated (UJ) based on EIS percent recoveries less than 50.

Non-detect results for n-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples are considered estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_ST08001_06152022
LORNG_ST08002_06152022FD
LORNG_ST09004_06152022
LORNG_ST13014_06152022
LORNG_ST18006_06152022
LORNG_ST16003_06162022
LORNG_ST18013_06162022
LORNG_ST23002_06162022
LORNG_ST13016_08312022FD

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on DoD PFAS validation guidelines due to EIS percent recoveries less than 20. Results for N-MeFOSA in the affected samples are considered unusable for project objectives:

LORNG_C1_ST_06142022
LORNG_C2_ST_06142022
LORNG_C3_ST_06142022
LORNG_C3_ST_06142022FD
LORNG_ST05002_06152022
LORNG_ST05003_06142022
LORNG_ST05003_06142022FD
LORNG_ST07002_06142022
LORNG_ST09001_06152022
LORNG_ST09001_06152022FD
LORNG_ST13001_06142022
LORNG_ST08002_06152022

LORNG_ST08004_06152022
LORNG_ST09005_06152022
LORNG_ST11001_06152022
LORNG_ST13015_06152022
LORNG_ST18001_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST16002_06162022
LORNG_ST17000_06162022
LORNG_ST18003_06162022
LORNG_ST18003_06162022FD
LORNG_ST18007_06162022
LORNG_ST18008_06162022
LORNG_ST18009_06162022
LORNG_ST20002_06162022
LORNG_ST21001_06162022
LORNG_ST23003_06162022
LORNG_ST24001_06162022
LORNG_ST20001_06182022
LORNG_ST13016_08312022

The non-detect result for perfluorobutanesulfonic acid (PFBS) in sample LORNG_ST05003_06142022FD was qualified estimated (UJ) and the detections of PFBS in samples LORNG_ST18006_06152022 and LORNG_ST18007_06162022 were qualified estimated (J) based on EIS percent recoveries less than 50.

Results for perfluorobutanoic acid (PFBA) in the following samples were qualified estimated (J) based on EIS percent recoveries less than 50:

LORNG_ST18006_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST18007_06162022
LORNG_ST18013_06162022
LORNG_ST24001_06162022

Non-detect results for PFBA in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_ST16002_06162022
LORNG_ST16003_06162022
LORNG_ST17000_06162022
LORNG_ST18003_06162022
LORNG_ST18003_06162022FD
LORNG_ST21001_06162022
LORNG_ST23003_06162022

The non-detect result for PFDS in sample LORNG_ST18007_06162022 was qualified estimated (UJ) based on EIS percent recovery less than 50.

The non-detect result for perfluorodecanoic acid (PFDA) in sample LORNG_ST18007_06162022 was qualified estimated (UJ) based on EIS percent recovery less than 50.

Non-detect results for perfluorododecanoic acid (PFDoA) in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_ST18006_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST16002_06162022
LORNG_ST16003_06162022
LORNG_ST18007_06162022

Non-detect results for perfluoroheptanesulfonic acid (PFHpS) in samples LORNG_ST05003_06142022FD and LORNG_ST18007_06162022 were qualified estimated (UJ) based on EIS percent recoveries less than 50.

Results for perfluoroheptanoic acid (PFHpA) in samples LORNG_ST05003_06142022FD, LORNG_ST18006_06152022, and LORNG_ST18007_06162022 were qualified estimated (J) based on EIS percent recoveries less than 50.

The result for perfluorohexanesulfonic acid (PFHxS) in sample LORNG_ST18007_06162022 was qualified estimated (J) based on EIS percent recovery less than 50.

Results for perfluorohexanoic acid (PFHxA) in samples LORNG_ST05003_06142022FD, LORNG_ST18006_06152022, and LORNG_ST18007_06162022 were qualified estimated (J) based on EIS percent recoveries less than 50.

Non-detect results for perfluorononanesulfonic acid (PFNS) in samples LORNG_ST18001_06152022 and LORNG_ST18007_06162022 were qualified estimated (UJ) based on EIS percent recoveries less than 50.

The result for perfluorononanoic acid (PFNA) in sample LORNG_ST18007_06162022 was qualified estimated (J) based on EIS percent recovery less than 50.

Non-detect results for perfluorooctane sulfonamide (PFOSA) in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_C1_ST_06142022
LORNG_ST05003_06142022
LORNG_ST13001_06142022
LORNG_ST17000_06162022
LORNG_ST18007_06162022
LORNG_ST24001_06162022

Non-detect results for PFOSA in samples LORNG_ST05003_06142022FD and LORNG_ST18008_06162022 were qualified as rejected (R) based on DoD PFAS validation

guidelines due to EIS percent recoveries less than 20. Results for PFOSA in the affected samples are considered unusable for project objectives.

Results for PFOSA in the following samples were qualified estimated (J) based on EIS percent recoveries less than 50:

LORNG_C3_ST_06142022
LORNG_C3_ST_06142022FD
LORNG_ST05002_06152022
LORNG_ST09001_06152022FD
LORNG_ST12001_06162022
LORNG_ST16001_06162022

Results for perfluorooctanesulfonic acid (PFOS) in samples LORNG_ST12001_06162022 and LORNG_ST18007_06162022 were qualified estimated (J) based on EIS percent recoveries less than 50.

The result for perfluorooctanoic acid (PFOA) in sample LORNG_ST18007_06162022 was qualified estimated (J) based on EIS percent recovery less than 50.

The non-detect result for perfluoropentanesulfonic acid (PFPeS) in sample LORNG_ST18007_06162022 was qualified estimated (UJ) based on EIS percent recovery less than 50.

Results for perfluoropentanoic acid (PFPeA) in samples LORNG_ST05003_06142022FD, LORNG)ST18006_06152022, LORNG_ST18007_06162022, and LORNG_ST18013_06162022 were qualified estimated (J) based on EIS percent recovery less than 50.

Non-detect results for perfluorotetradecanoic acid (PFTeDA) in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50.

LORNG_C3_ST_06142022FD
LORNG_ST05003_06142022FD
LORNG_ST09001_06152022
LORNG_ST09001_06152022FD
LORNG_ST13001_06142022
LORNG_ST13015_06152022
LORNG_ST18006_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST16002_06162022
LORNG_ST17000_06162022
LORNG_ST18003_06162022
LORNG_ST18003_06162022FD
LORNG_ST18007_06162022
LORNG_ST18008_06162022
LORNG_ST18009_06162022

Non-detect results for PFTeDA in samples LORNG_ST05003_06142022 and LORNG_ST20001_06182022 were qualified rejected (R) based on DoD PFAS validation guidelines due to EIS percent recoveries less than 20. Results for PFTeDA in the affected samples are considered unusable for project objectives.

Non-detect results for perfluorotridecanoic acid (PFTrDA) in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50.

LORNG_ST18006_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST16002_06162022
LORNG_ST16003_06162022
LORNG_ST18007_06162022

Non-detect results for perfluoroundecanoic acid (PFUnA) in the following samples were qualified estimated (UJ) based on EIS percent recoveries less than 50:

LORNG_ST18006_06152022
LORNG_ST12001_06162022
LORNG_ST16001_06162022
LORNG_ST16003_06162022
LORNG_ST18007_06162022
LORNG_ST18008_06162022

2.1.3 Miscellaneous

The transition ion ratio for PFOSA (6.3) in sample LORNG_ST05002_06152022 was outside the acceptance range (1.8 - 5.3) calculated from the associated mid-level calibration standard. The PFOSA result in sample LORNG_ST05002_06152022 was qualified estimated (J).

The transition ion ratio for PFNS (21.7) in sample LORNG_ST11001_06152022 was outside the acceptance range (24.9 – 74.7) calculated from the associated mid-level calibration standard. The PFNS result in sample LORNG_ST11001_06152022 was qualified estimated (J).

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



November 2, 2022

Reviewed by: Julie Ricardi



November 18, 2022

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		M537
					Fraction		T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
FA96552	C1	LORNG_C1_ST_06142022	FA96552-1	6/14/2022	WS	N	25
	C2	LORNG_C2_ST_06142022	FA96552-2	6/14/2022	WS	N	25
	C3	LORNG_C3_ST_06142022	FA96552-3	6/14/2022	WS	N	25
		LORNG_C3_ST_06142022FD	FA96552-4	6/14/2022	WS	FD	25
	ST05002	LORNG_ST05002_06152022	FA96552-5	6/15/2022	WS	N	25
	ST05003	LORNG_ST05003_06142022	FA96552-6	6/14/2022	WS	N	25
		LORNG_ST05003_06142022FD	FA96552-7	6/14/2022	WS	FD	25
	ST07001	LORNG_ST07001_06142022	FA96552-8	6/14/2022	WS	N	25
	ST07002	LORNG_ST07002_06142022	FA96552-9	6/14/2022	WS	N	25
	ST08001	LORNG_ST08001_06152022	FA96552-11	6/15/2022	WS	N	25
	ST09001	LORNG_ST09001_06152022	FA96552-12	6/15/2022	WS	N	25
		LORNG_ST09001_06152022FD	FA96552-13	6/15/2022	WS	FD	25
	ST13001	LORNG_ST13001_06142022	FA96552-10	6/14/2022	WS	N	25
FA96626	ST08002	LORNG_ST08002_06152022	FA96626-1	6/15/2022	WS	N	25
		LORNG_ST08002_06152022FD	FA96626-2	6/15/2022	WS	FD	25
	ST08004	LORNG_ST08004_06152022	FA96626-3	6/15/2022	WS	N	25
	ST09004	LORNG_ST09004_06152022	FA96626-4	6/15/2022	WS	N	25
	ST09005	LORNG_ST09005_06152022	FA96626-5	6/15/2022	WS	N	25
	ST11001	LORNG_ST11001_06152022	FA96626-6	6/15/2022	WS	N	25
	ST13014	LORNG_ST13014_06152022	FA96626-7	6/15/2022	WS	N	25
	ST13015	LORNG_ST13015_06152022	FA96626-8	6/15/2022	WS	N	25
	ST18001	LORNG_ST18001_06152022	FA96626-9	6/15/2022	WS	N	25
	ST18006	LORNG_ST18006_06152022	FA96626-10	6/15/2022	WS	N	25
FA96641	ST12001	LORNG_ST12001_06162022	FA96641-1	6/16/2022	WS	N	25
	ST16001	LORNG_ST16001_06162022	FA96641-2	6/16/2022	WS	N	25
	ST16002	LORNG_ST16002_06162022	FA96641-3	6/16/2022	WS	N	25
	ST16003	LORNG_ST16003_06162022	FA96641-4	6/16/2022	WS	N	25
	ST17001	LORNG_ST17001_06162022	FA96641-13	6/16/2022	WS	N	25
	ST18003	LORNG_ST18003_06162022	FA96641-5	6/16/2022	WS	N	25
		LORNG_ST18003_06162022FD	FA96641-6	6/16/2022	WS	FD	25
	ST18007	LORNG_ST18007_06162022	FA96641-7	6/16/2022	WS	N	25
	ST18008	LORNG_ST18008_06162022	FA96641-8	6/16/2022	WS	N	25
	ST18009	LORNG_ST18009_06162022	FA96641-9	6/16/2022	WS	N	25
	ST18013	LORNG_ST18013_06162022	FA96641-10	6/16/2022	WS	N	25
	ST20002	LORNG_ST20002_06162022	FA96641-11	6/16/2022	WS	N	25
	ST21001	LORNG_ST21001_06162022	FA96641-14	6/16/2022	WS	N	25
	ST23002	LORNG_ST23002_06162022	FA96641-15	6/16/2022	WS	N	25
	ST23003	LORNG_ST23003_06162022	FA96641-16	6/16/2022	WS	N	25
	ST24001	LORNG_ST24001_06162022	FA96641-12	6/16/2022	WS	N	25
FA96677	ST20001	LORNG_ST20001_06182022	FA96677-1	6/18/2022	WS	N	25
FA98676	ST13016	LORNG_ST13016_08312022	FA98676-1	8/31/2022	WS	N	25
		LORNG_ST13016_08312022FD	FA98676-2	8/31/2022	WS	FD	25

Notes:

T = Total

N = Normal Field Sample, FD = Field Duplicate

WS = Surface Water

Shaded sample identifications indicate samples validated by USEPA Stage 4 validation procedures

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:9/27/22
Checked by: JAR
Date: 11/18/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96552									
		Location	C1	C2	C3		ST05002	ST05003		ST07001		
		Sample Date	6/14/2022	6/14/2022	6/14/2022		6/15/2022	6/14/2022		6/14/2022		
		Sample ID	LORNG_C1_ST_06142022	LORNG_C2_ST_06142022	LORNG_C3_ST_06142022	LORNG_C3_ST_06142022FD	LORNG_ST05002_06152022	LORNG_ST05003_06142022	LORNG_ST05003_06142022FD	LORNG_ST07001_06142022		
		QC Code	N	N	N	FD	N	N	FD	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	4 U	3.6 U	3.6 U	3.6 U	18 U	3.6 UJ	18 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	4 U	56.8	58.1	64.2	3.6 U	3.6 U	47.3	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	4 U	8.2	8.2	199	3.6 U	3.6 U	56.1	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	19 R	20 R	18 R	18 R	18 R	18 R	18 R	71 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.3 J	1.4 J	5.7	4.8	26.7	8.9 U	1.8 UJ	17.1 J	
		Perfluorobutanoic acid (PFBA)	NG/L	4.5 J	4.3 J	13.3	13.3	116	18 U	4.7 J	65.3	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 UJ	2 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	8.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	2 U	1.8 U	1.8 U	5.3	1.8 U	1.8 U	7.6 J	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	36 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	2 U	5.8	6	34	1.8 U	1.8 UJ	31.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.6	3.3 J	21.7	22.6	258	2.1 J	1.7 J	182	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	16.3	15.1	130	131	727	4.9	4.3	1,180	
		Perfluorohexanoic acid (PFHxA)	NG/L	3.9	3.5 J	33.7	34.1	219	8.9 U	1.2 J	263	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 UJ	2 U	1.8 U	1.8 U	28.1	1.8 U	1.8 U	14.2 J	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	2 U	3.5 J	3.4 J	42.4	1.8 U	1.8 U	43.8	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 UJ	2 U	13.6 J	13.9 J	91.5 J	8.9 UJ	1.8 R	140	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	27.2	24.2	234	238	3,110	2.7 J	2.1 J	2,440	
		Perfluorooctanoic acid (PFOA)	NG/L	3.7	3.5 J	35.3	35.6	190	3 J	2.2 J	305	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.2 J	1.1 J	6.7	6.6	53.7	8.9 U	1.8 U	28.3	
		Perfluoropentanoic acid (PFPeA)	NG/L	5.6	5.4	35.9	36.1	385	8.9 U	1.6 J	215	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	2 U	1.8 U	1.8 UJ	1.8 U	8.9 R	1.8 UJ	36 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	36 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	2 U	1.8 U	1.8 U	1 J	1.8 U	1.8 U	8.9 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Date: 9/27/22
Checked by: JAR
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Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96552					FA96626		
		Location	ST07002	ST08001	ST09001		ST13001	ST08002		ST08004
		Sample Date	6/14/2022	6/15/2022	6/15/2022		6/14/2022	6/15/2022		6/15/2022
		Sample ID	LORNG_ST07002_06142022	LORNG_ST08001_06152022	LORNG_ST09001_06152022	LORNG_ST09001_06152022FD	LORNG_ST13001_06142022	LORNG_ST08002_06152022	LORNG_ST08002_06152022FD	LORNG_ST08004_06152022
		QC Code	N	N	N	FD	N	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	28.8	2 J	3.9 J	5.2 J	3.6 U	3.6 U	3.6 U	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	11.5	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 R	18 UJ	3.6 R	18 R	18 R	18 R	18 UJ	18 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.2	1.8 U	1.7 J	2.2 J	1.8 U	1.8 J	1.7 J	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	19.5	4.6 J	5.8 J	5.5 J	7.5	2.9 J	2.9 J	2 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	4.4	1.7 J	1.5 J	1.8 J	1.8 U	2 J	2.3 J	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	51.2	5.1	6.4	6.5	2.9 J	1.7 J	1.7 J	2.7 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	115	59.7	31.4	36	10.3	36.9	38.3	7.3
		Perfluorohexanoic acid (PFHxA)	NG/L	43.9	11.6	8.1	8.1	3.2 J	1.5 J	1.4 J	1.7 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	7.4	1.8 U	1.5 J	1.6 J	1.8 U	0.94 J	0.9 J	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	10.6 J	1.2 J	2.6 J	2.8 J	1.8 UJ	1.8 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	192	54	65.2	74.6	12	112	110	25.6
		Perfluorooctanoic acid (PFOA)	NG/L	51.5	13	9.2	10.5	3.4 J	3.6	3.5 J	2.1 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	7	3.1 J	2 J	2.2 J	1.8 U	2.3 J	2.4 J	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	62.2	10.4	9.8	9.9	1.8 U	1 J	1 J	2.1 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 U	1.8 U	1.8 UJ	1.8 UJ	1.8 UJ	8.9 U	8.9 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

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Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96626							FA96641
		Location	ST09004	ST09005	ST11001	ST13014	ST13015	ST18001	ST18006	ST12001
		Sample Date	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/16/2022
		Sample ID	LORNG_ST09004_06152022	LORNG_ST09005_06152022	LORNG_ST11001_06152022	LORNG_ST13014_06152022	LORNG_ST13015_06152022	LORNG_ST18001_06152022	LORNG_ST18006_06152022	LORNG_ST12001_06162022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	3.6 U	35.8	1.8 J	3.6 U	3.6 U	3.6 U	166
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U	21.2	3.6 U	3.6 U	3.6 U	3.6 U	57.9
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 UJ	18 R	3.6 R	3.6 UJ	20 R	3.6 R	3.6 UJ	71 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	0.93 J	10.3	1.1 J	1.8 U	1.8 U	1.1 J	28.5
		Perfluorobutanoic acid (PFBA)	NG/L	3.9 J	5 J	11.4	4.9 J	4.2 J	1.8 J	4.2 J	40.7 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	36 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3 J
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	36 UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 U	18.3	1.3 J	1.8 U	1.8 U	1.8 U	56.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3 J	6.1	28.2	7.6	2.5 J	1.8 U	3.3 J	63.8
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	14	18.7	118	23.7	11.4	1.2 J	10.7	462
		Perfluorohexanoic acid (PFHxA)	NG/L	1.3 J	4.6	36.1	5.8	3 J	1.8 U	2.7 J	131
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	4.5 J	1.8 U	1.8 U	1.8 UJ	1.8 U	16.9
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.4 J	9.9	1.5 J	1.8 U	1.8 U	1.8 U	13.2
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.8 U	6.8	1.8 U	1.8 U	1.8 U	1.8 U	42.9 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	26.5	32.2	1,160	51.8	15.6	1.8 U	39.5	4,510 J
		Perfluorooctanoic acid (PFOA)	NG/L	1.7 J	5.2	55.3	6.4	2.3 J	1.8 U	2.6 J	96.3
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	0.99 J	15.1	1.6 J	1.8 U	1.8 U	1.8 U	44.2
		Perfluoropentanoic acid (PFPeA)	NG/L	1.5 J	5.2	19.5	7.8	4.3	1.8 U	3.9 J	113
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	1.8 U	1.8 UJ	36 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	36 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	36 UJ

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		SDG	FA96641													
		Location	ST16001		ST16002		ST16003		ST17001		ST18003				ST18007		ST18008	
		Sample Date	6/16/2022		6/16/2022		6/16/2022		6/16/2022		6/16/2022				6/16/2022		6/16/2022	
		Sample ID	LORNG_ST16001_06162022		LORNG_ST16002_06162022		LORNG_ST16003_06162022		LORNG_ST17001_06162022		LORNG_ST18003_06162022		LORNG_ST18003_06162022FD		LORNG_ST18007_06162022		LORNG_ST18008_06162022	
		QC Code	N		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	18	U	3.6	U	3.6	UJ	3.6	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3	J	2.5	J	3.6	U	3.6	U	3.6	U	3.6	U	3.6	UJ	3.6	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	UJ	3.6	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	UJ	18	U	18	U	3.6	U	3.6	U	3.6	U	3.6	UJ	3.6	UJ
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	R	18	R	18	UJ	18	R	18	R	18	R	3.6	R	3.6	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.2	J	2.2	J	0.95	J	1.8	U	8.9	U	1.8	U	1.7	J	1.8	U
		Perfluorobutanoic acid (PFBA)	NG/L	7	J	18	UJ	18	UJ	18	UJ	18	UJ	18	UJ	9	J	2.9	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	8.9	U	8.9	U	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	UJ	8.9	UJ	8.9	UJ	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7	J	1.6	J	1.8	U	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.2		5.5		5.8		2.1	J	3.4	J	3.3	J	3.5	J	1.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	35.9		34.2		19.8		5.9		10.5		9.9		10.9	J	11	
		Perfluorohexanoic acid (PFHxA)	NG/L	7.3		8		5.1		1.9	J	8.9	U	3.2	J	3.6	J	1.7	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluorononanoic acid (PFNA)	NG/L	1	J	1.2	J	1.3	J	1.8	U	1.8	U	1.8	U	1.3	J	1.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.6	J	1.4	J	1.8	U	8.9	UJ	8.9	U	8.9	U	1.8	UJ	1.8	R
		Perfluorooctanesulfonic acid (PFOS)	NG/L	60.9		64.3		53.6		8.3		18.6		18.6		6.5	J	11.1	
		Perfluorooctanoic acid (PFOA)	NG/L	6.4		6.5		4.5		2.5	J	3.3	J	3.2	J	3.7	J	1.5	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.9	J	2.7	J	1.2	J	1.8	U	8.9	U	1.8	U	1.8	UJ	1.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	7.6		6.8		5.6		2.6	J	6.3	J	8.9	U	7.1	J	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	UJ	8.9	UJ	8.9	U	8.9	UJ	8.9	UJ	8.9	UJ	1.8	UJ	1.8	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	UJ	8.9	UJ	8.9	UJ	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	UJ	8.9	U	8.9	UJ	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	UJ

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Former Loring Air Force Base, Limestone, Maine

		SDG	FA96641							FA96677
		Location	ST18009	ST18013	ST20002	ST21001	ST23002	ST23003	ST24001	ST20001
		Sample Date	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/18/2022
		Sample ID	LORNG_ST18009_06162022	LORNG_ST18013_06162022	LORNG_ST20002_06162022	LORNG_ST21001_06162022	LORNG_ST23002_06162022	LORNG_ST23003_06162022	LORNG_ST24001_06162022	LORNG_ST20001_06182022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	4 UJ	20 U	3.6 U	4 U	3.6 U	3.6 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	4 U	4 U	3.6 U	4 U	3.6 U	3.6 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	4 U	4 U	3.6 U	4 U	3.6 U	3.6 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	4 U	4 U	3.6 U	4 U	3.6 U	18 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 R	20 UJ	20 R	18 R	20 UJ	18 R	18 R	20 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	4 U	4 U	3.6 U	4 U	3.6 U	3.6 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	2.5 J	10 U	4.5	2 U	1.3 J	1.8 U	1.6 J
		Perfluorobutanoic acid (PFBA)	NG/L	5.9 J	7.8 J	20 U	18 UJ	20 U	18 UJ	4.3 J	2.6 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 J	2 U	4.7 J	2 U	1.8 U	1.8 U	2.7 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.5 J	6	2 U	6.4	2 U	2.2 J	2 J	1.2 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	44	4	88.9	4.9	25	5.1	37.4
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	6.4	10 U	11.6	2 U	3.8	1.6 J	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	1 J
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	2 U	2 U	1.9 J	2 U	1.1 J	1.8 U	1.3 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	2.3 J	2 U	1.8 U	2 U	1.2 J	8.9 UJ	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	76	12.8	339	3.8 J	38.9	11.4	257
		Perfluorooctanoic acid (PFOA)	NG/L	1.3 J	4.6	2 U	12.8	4.4	4.2	2.3 J	2 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	4.4	10 U	7.2	2 U	1.8 U	1.8 U	2.9 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	7.6 J	10 U	11.6 J	1.1 J	3.8 J	2.6 J	4
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	8.9 UJ	2 U	10 U	8.9 U	2 U	8.9 U	8.9 U	10 R
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	2 U	2 U	1.8 U	2 U	1.8 U	1.8 U	2 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/27/22
Checked by: JAR
Date: 11/18/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

			SDG	FA98676			
			Location	ST13016			
			Sample Date	8/31/2022			
			Sample ID	LORNG_ST13016_08312022		LORNG_ST13016_08312022FD	
			QC Code	N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4	U	4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4	U	4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4	U	4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4	U	4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20	R	4	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4	U	4	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U
		Perfluorobutanoic acid (PFBA)	NG/L	4.4	J	4.1	J
		Perfluorodecane sulfonate (PFDS)	NG/L	2	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3	J	1.1	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	26.7		29.9	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	J	2.2	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6.9		10.4	
		Perfluorooctanoic acid (PFOA)	NG/L	1.1	J	1.5	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	5.9		4.3	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	10	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/27/22
Checked by: JAR
Date: 11/18/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96552	M537	T	FA96552-1	LORNG_C1_ST_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	MSL, MSD	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	UJ	MSL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96552-2	LORNG_C2_ST_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA96552-3	LORNG_C3_ST_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	13.6	=	13.6	J	RIS	NG/L
			FA96552-4	LORNG_C3_ST_06142022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	13.9	=	13.9	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96552-5	LORNG_ST05002_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	91.5	=	91.5	J	RIS	NG/L
			FA96552-6	LORNG_ST05003_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	R	RIS	NG/L
			FA96552-7	LORNG_ST05003_06142022FD	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.7	J	1.7	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	R	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L

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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96552	M537	T	FA96552-9	LORNG_ST07002_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA96552-11	LORNG_ST08001_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.2	J	1.2	J	IAG	NG/L
			FA96552-12	LORNG_ST09001_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96552-13	LORNG_ST09001_06152022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	J	2.8	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96552-10	LORNG_ST13001_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
FA96626	M537	T	FA96626-1	LORNG_ST08002_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA96626-2	LORNG_ST08002_06152022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA96626-3	LORNG_ST08004_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA96626-4	LORNG_ST09004_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
			FA96626-5	LORNG_ST09005_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA96626-6	LORNG_ST11001_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	4.5	=	4.5	J	IAG	NG/L
			FA96626-7	LORNG_ST13014_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96626	M537	T	FA96626-8	LORNG_ST13015_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96626-9	LORNG_ST18001_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	UJ	RIS	NG/L
			FA96626-10	LORNG_ST18006_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.3	J	3.3	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	2.7	J	2.7	J	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	3.9	=	3.9	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	UJ	RIS	NG/L
FA96641	M537	T	FA96641-1	LORNG_ST12001_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	71	U	71	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	40.7	J	40.7	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	36	U	36	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	42.9	=	42.9	J	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	4510	=	4510	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	36	U	36	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	36	U	36	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	36	U	36	UJ	RIS	NG/L

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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96641	M537	T	FA96641-2	LORNG_ST16001_06162022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	7	J	7	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.6	J	1.6	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96641-3	LORNG_ST16002_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA96641-4	LORNG_ST16003_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA96641-13	LORNG_ST17000_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	LCH	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96641	M537	T	FA96641-5	LORNG_ST18003_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	6.3	J	6.3	J	LCH	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA96641-6	LORNG_ST18003_06162022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA96641-7	LORNG_ST18007_06162022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					8:2 Fluorotelomer sulfonate (8:2 FTS)	3.6	U	3.6	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	9	=	9	J	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.5	J	3.5	J	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	10.9	=	10.9	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	3.6	=	3.6	J	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	6.5	=	6.5	J	RIS	NG/L

Prepared by:AKN
Date:9/27/22
Checked by: JAR
Date: 11/18/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96641	M537	T	FA96641-7	LORNG_ST18007_06162022	Perfluorooctanoic acid (PFOA)	3.7	=	3.7	J	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	7.1	=	7.1	J	RIS, LCH	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96641-8	LORNG_ST18008_06162022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.6	U	3.6	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	UJ	RIS	NG/L
			FA96641-9	LORNG_ST18009_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA96641-10	LORNG_ST18013_06162022	4:2 Fluorotelomer sulfonate (4:2 FTS)	4	U	4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	7.8	J	7.8	J	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.9	J	1.9	J	LCH	NG/L
					Perfluoropentanoic acid (PFPeA)	7.6	=	7.6	J	RIS, LCH	NG/L
			FA96641-11	LORNG_ST20002_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA96641-14	LORNG_ST21001_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	4.7	=	4.7	J	LCH	NG/L
					Perfluoropentanoic acid (PFPeA)	11.6	=	11.6	J	LCH	NG/L

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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96641	M537	T	FA96641-15	LORNG_ST23002_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	LCH	NG/L
			FA96641-16	LORNG_ST23003_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	U	18	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	3.8	=	3.8	J	LCH	NG/L
			FA96641-12	LORNG_ST24001_06162022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4.3	J	4.3	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	LCH	NG/L
FA96677	M537	T	FA96677-1	LORNG_ST20001_06182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	R	RIS	NG/L
FA98676	M537	T	FA98676-1	LORNG_ST13016_08312022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA98676-2	LORNG_ST13016_08312022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L

Notes:

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

IAG = Ion abundance ratio outside calculated limits

LCH = LCS recovery greater than upper control limit

MSD = Matrix spike (MS)/MSD RPD criteria exceeded

MSL = MS recovery less than lower control limit

RIS = Extracted internal standard outside of acceptance limits

NG/L = nanograms per liter

Prepared by:AKN
Date:9/27/22
Checked by: JAR
Date: 11/18/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96552	LORNG_C3_ST_06142022	LORNG_C3_ST_06142022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	56.8		58.1		2	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	8.2		8.2		0	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	R	18	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5.7		4.8		17	
				Perfluorobutanoic acid (PFBA) (NG/L)	13.3		13.3		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.8		6		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	21.7		22.6		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	130		131		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	33.7		34.1		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	3.5	J	3.4	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	13.6	J	13.9	J	2	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	234		238		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	35.3		35.6		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	6.7		6.6		2	
				Perfluoropentanoic acid (PFPeA) (NG/L)	35.9		36.1		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
	LORNG_ST05003_06142022	LORNG_ST05003_06142022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	18	U	3.6	UJ	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	R	18	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	8.9	U	1.8	UJ	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	18	U	4.7	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	UJ	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.1	J	1.7	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	4.9		4.3		13	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.9	U	1.2	J	NC	

Prepared by: AKN 9/27/22
Checked by: JAR 11/18/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96552	LORNG_ST05003_06142022	LORNG_ST05003_06142022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	8.9	UJ	18	R	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.7	J	2.1	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	3	J	2.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8.9	U	1.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	8.9	U	1.6	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	8.9	R	1.8	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
	LORNG_ST09001_06152022	LORNG_ST09001_06152022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.9	J	5.2	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.6	R	18	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	2.2	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	5.8	J	5.5	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.5	J	1.8	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.4		6.5		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	31.4		36		14	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.1		8.1		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.5	J	1.6	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.6	J	2.8	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	65.2		74.6		13	
				Perfluorooctanoic acid (PFOA) (NG/L)	9.2		10.5		13	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2	J	2.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	9.8		9.9		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	UJ	1.8	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
FA96626	LORNG_ST08002_06152022	LORNG_ST08002_06152022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	R	18	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96626	LORNG_ST08002_06152022	LORNG_ST08002_06152022FD	PFAS	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	J	1.7	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.9	J	2.9	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	J	2.3	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.7	J	1.7	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	36.9		38.3		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.5	J	1.4	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.94	J	0.9	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	112		110		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.6		3.5	J	3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.3	J	2.4	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1	J	1	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
FA96641	LORNG_ST18003_06162022	LORNG_ST18003_06162022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	18	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	R	18	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	8.9	U	1.8	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	18	UJ	18	UJ	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.4	J	3.3	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	10.5		9.9		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.9	U	3.2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	8.9	U	8.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	18.6		18.6		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.3	J	3.2	J	NC	

Prepared by: AKN 9/27/22
Checked by: JAR 11/18/22

Table 4 - Field Duplicate RPD Summary

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Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96641	LORNG_ST18003_06162022	LORNG_ST18003_06162022FD	PFAS	Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8.9	U	1.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.3	J	8.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	8.9	UJ	8.9	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
FA98676	LORNG_ST13016_08312022	LORNG_ST13016_08312022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	20	R	4	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.4	J	4.1	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.3	J	1.1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	26.7		29.9		11	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	J	2.2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	6.9		10.4		40	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1.5	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.9		4.3		31	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	10	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

J = Concentration is estimated

R = Sample reuslt is considered unusable for project objectives

NC = RPD not calculated; values less than LOQ

ng/L = nanograms per liter

RPD = relative percent difference

SDG = Sample Delivery Group

Prepared by: AKN 9/27/22
Checked by: JAR 11/18/22

Table 5 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Stormwater Sampling - 2022
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water and Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Surface water and sediment samples were collected at the Former Loring Air Force Base in Limestone, Maine, in June, July, August, and September 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 213 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 74 samples for Total Organic Carbon (TOC) (subsets subcontracted to CT Laboratory (TAL) in Baraboo, Wisconsin) by the Llyod Kahn method.

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate Relative Percent difference (RPD) Summary
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. TOC data were validated using Stage 2A procedures. Ten percent of the PFAS and TOC samples collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and calculation verifications of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018) and USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

FDD = Field duplicate RPD criteria exceeded
HHL = Sampling to analysis holding time exceeded
LDD = Lab duplicate RPD criteria exceeded
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. A summary of data validation qualifications and interpretations on data usability are provided in this section. More detailed discussions are provided in Section 2.0.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for MS/MSD recovery, field duplicate precision, and extracted internal standard (EIS) recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as estimated values. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

The reporting limits for the following samples and PFAS compounds are usable as estimated values due to the sample being extracted past the 28-day holding time for PFAS analysis:

- Perfluorododecanoic acid (PFDoA), perfluorotetradecanoic acid (PFTeDA), perfluorotridecaonic acid (PFTrDA), perfluorooctane sulfonamide (PFOSA), and N-methyl perfluorooctane sulfonamide (N-MeFOSA) in sample LORNG_SW11004_06212022
- PFTeDA, PFOSA, and N-MeFOSA in sample LORNG_SW11008_06212022
- PFTeDA in sample LORNG_LT14A_SW_07072022
- PFTeDA in sample LORNG_LT14A_SW_07072022

Recoveries within QSM and QPP project limits were reported for PFAS compounds in most MS/MSD analyses indicating accuracy goals were achieved in the surface water and sediment media with the following exception:

- The recoveries for N-MeFOSA and PFTrDA in sample LORNG_LT03_SW_07112022 were outside limits. Results are usable as estimated values due to low recoveries and/or RPD exceedances in the associated MS/MSD.

Field duplicate results within QPP project limits were reported for PFAS compounds in most field duplicate pairs indicating precision goals were achieved for the surface water and sediment media with the following exceptions:

- The results for perfluorooctanesulfonic acid (PFOS) in samples LORNG_LT1002_SW_07102022 and LORNG_LT1002_SW_07102022FD are considered estimated based on an RPD that exceeds the project limit of 30.
- The results for perfluoropentanoic acid (PFPeA) in samples LORNG_LT16_SW_07072022 and LORNG_LT16_SW_07072022FD are considered estimated based on an RPD that exceeds project limit of 30.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on EIS recovery. In accordance with QSM and QPP objectives EIS recovery limits are 50-150 percent. Target compound results associated with recoveries less than 50 percent are qualified estimated. Non-detect results associated with recoveries less than 20 percent are

qualified rejected. Affected samples and associated qualified results are summarized in Table 3 with code RIS. Results qualified estimated (J/UJ) are considered usable as estimated values. Results qualified rejected (R) are considered unusable. The majority of rejected results are for the target compound N-MeFOSA as discussed below. A smaller number of results for PFOSA, PFTeDA, and PFTrDA were also rejected as indicated in Table 3.

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20. The low recoveries are believed to be due to a matrix effect due to geological conditions at the sample locations. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_AA20SW01_06182022
LORNG_AA20SW02_06182022
LORNG_SD18005_06192022
LORNG_SW18002_06182022
LORNG_SW18004_06192022
LORNG_SW18005_06192022
LORNG_AA19SW02_07072022
LORNG_AA19SW03_07072022
LORNG_LT16_SW_07072022
LORNG_LT16_SW_07072022FD
LORNG_GB_04_SW_07072022
LORNG_LT1006A_SW_07072022
LORNG_LT17_SW_07072022
LORNG_SW11004_06212022
LORNG_SW11008_06212022
LORNG_SW11009_06212022
LORNG_LT19_SW_07072022
LORNG_LMR_001_SW_07082022
LORNG_SW19004_07072022
LORNG_LT02_SW_07082022FD
LORNG_LT13A_SW_07082022
LORNG_SW22001_07082022FD
LORNG_LT1006_SW_07082022
LORNG_LT02_SW_07082022
LORNG_LT14_SW_07082022
LORNG_LT18_SW_07082022
LORNG_LT13_SW_07082022
LORNG_LMR_002_SW_07082022
LORNG_LS_003_SW_07072022
LORNG_LT15_SW_07082022
LORNG_SW22003_07082022
LORNG_LT14A_SW_07072022
LORNG_HSSG01_07202022
LORNG_LS_002_SW_07202022
LORNG_HSSG02_07212022

LORNG_HSSG04_07212022
LORNG_HSSG05_07212022
LORNG_HSSG05_07212022FD
LORNG_LT04_SW_07112022
LORNG_LT04_SW_07112022FD
LORNG_SW08002_07112022
LORNG_SW08002_07112022FD
LORNG_SW09002_07112022
LORNG_SW11007_07112022
LORNG_SW12011_07112022
LORNG_SW21001_07112022
LORNG_WBGB_002_SW_07112022
LORNG_WBGB_003_SW_07112022
LORNG_LT03_SW_07112022
LORNG_SD12010_07122022
LORNG_SW11005_07122022
LORNG_SW11006_07122022
LORNG_SW12010_07122022
LORNG_WLVB_001_SD_07112022
LORNG_WLVB_001_SW_07112022
LORNG_SWI_007_SW_08062022
LORNG_EBGB_001_SW_07092022
LORNG_EBGB_006_SW_07092022
LORNG_EBGB_006_SW_07092022FD
LORNG_SW17006_07092022
LORNG_BB_001_SW_07092022
LORNG_WLB_001_SW_07092022
LORNG_SW16005_07102022
LORNG_SW16005_07102022FD
LORNG_SW17007_07092022
LORNG_EBGB_002_SW_07102022
LORNG_LT05_SW_07102022
LORNG_LT05A_SW_07102022
LORNG_SW05001_07102022
LORNG_SW16006_07102022
LORNG_EBGB_005_SD_07102022
LORNG_EBGB_005_SW_07102022
LORNG_LS_001_SW_07102022
LORNG_EBGB_003_SW_07092022
LORNG_WBGB_005_SW_07102022
LORNG_LT1002_SW_07102022
LORNG_LT1002_SW_07102022FD
LORNG_SW21003_07102022
LORNG_SW21004_07102022
LORNG_HSSG03_07222022

LORNG_HSSG06_07222022
LORNG_SWI_006_SW_08052022
LORNG_SWI_002_SW_08052022
LORNG_ FHSSO01_09192022
LORNG_ FHSSO02_09192022
LORNG_NP_001_SW_07202022
LORNG_LT1001_SW_07102022
LORNG_LT1005_SW_07092022

Reporting limits for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries between 20 and 50 percent.

LORNG_SD18004_06192022
LORNG_SD11004_06212022
LORNG_SD11008_06212022
LORNG_SW22001_07082022
LORNG_SW22002_07082022
LORNG_LT15_SD_07082022
LORNG_LT13_SD_07082022
LORNG_HSSO01_07202022
LORNG_LS_002_SD_07202022
LORNG_HSSO02_07212022
LORNG_HSSO05_07212022
LORNG_HSSO05_07212022FD
LORNG_SD12011_07112022
LORNG_WBGB_002_SD_07112022
LORNG_SW12009_07122022FD
LORNG_HSSG08_07222022
LORNG_HSSO03_07222022
LORNG_HSSO08_07222022
LORNG_ FHSSO03_09192022
LORNG_GB_003_SW_07072022
LORNG_GB_004_SD_07072022
LORNG_LT16_SD_07072022
LORNG_LT16_SD_07072022FD
LORNG_WBGB_SED001_FP_07062022
LORNG_WBGB_SED003_FP_07062022
LORNG_EBGB_006_SD_07092022FD
LORNG_WBGB_004_SD_07102022
LORNG_WBGB_004_SW_07102022
LORNG_WBGB_005_SD_07102022

Of the 5,325 individual PFAS results reported for the surface water and sediment sampling, a total of 107 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a PFAS data completeness of 98% for the data set. All results for

PFAS compounds with project action limits identified for aqueous and soil in Worksheet 15 of the QPP are considered usable.

A total of eight field duplicate samples were collected for TOC in sediment. Results for 4 of 8 locations had RPDs that met the project precision objective of RPD ≤ 50. Four sample locations had RPDs that exceeded the limit with duplicate results differing from original sample results by factors of approximately 3 to 4 times indicating variability in measuring TOC occurred at the sediment locations. Results for TOC in duplicate pairs LORNG_LT16_SD_07072022_C and LORNG_LT16_SD_07072022FD_C, LORNG_LT02_SD_07082022_C and LORNG_LT02_SD_07082022FD_C, LORNG_LT1002_SD_07102022_C and LORNG_LT1002_SD_07102022FD_C, and LORNG_SD16005_07102022_C and LORNG_SD16005_071092022FD_C are considered estimated values. Qualified results are summarized on Table 3 with code FDD. Potential variability of TOC results should be considered when using sediment data.

The results for TOC were also qualified estimated in samples LORNG_LT1006A_SD_07072022_C and LORNG_LT14_SD_07082022_C based on laboratory duplicate RPDs that exceed project limits.

Of the 74 individual TOC results reported for the surface water and sediment event, no results were qualified as rejected. This represents a TOC data completeness of 100% for the surface water and sediment event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration

* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

The reporting limits for PFDoA, PFTeDA, PFTrDA, PFOSA, and N-MeFOSA in sample LORNG_SW11004_06212022 were qualified as estimated (UJ) due to the sample being extracted past the 28-day holding time for PFAS sample preparation.

The reporting limits for PFTeDA, PFOSA, and N-MeFOSA in sample LORNG_SW11008_06212022 were qualified as estimated (UJ) due to the sample being extracted past the 28-day holding time for PFAS sample preparation.

The reporting limit for PFTeDA in sample LORNG_LT14A_SW_07072022 was qualified as estimated (UJ) due to the sample being extracted past the 28-day holding time for PFAS sample preparation.

2.1.2 MS/MSD

The percent recoveries of N-MeFOSA and PFTrDA in the MS/MSD associated with sample LORNG_LT03_SW_07112022 were below the lower QC acceptance limit. The MS/MSD RPD exceeded the QC acceptance limit for PFTrDA. N-MeFOSA and PFTrDA were not detected in sample LORNG_LT03_SW_07112022 and reporting limits were qualified as estimated (UJ).

2.1.3 Field Duplicates

The results for PFOS in sample LORNG_LT1002_SW_07102022 and its associated field duplicate LORNG_LT1002_SW_07102022FD were qualified as estimated (J) based on a relative percent difference that exceeds project limits.

2.1.4 Extracted Internal Standard Recovery

The EIS percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20.

LORNG_AA20SW01_06182022
LORNG_AA20SW02_06182022

LORNG_SD18005_06192022
LORNG_SW18002_06182022
LORNG_SW18004_06192022
LORNG_SW18005_06192022
LORNG_AA19SW02_07072022
LORNG_AA19SW03_07072022
LORNG_LT16_SW_07072022
LORNG_LT16_SW_07072022FD
LORNG_GB_04_SW_07072022
LORNG_LT1006A_SW_07072022
LORNG_LT17_SW_07072022
LORNG_SW11004_06212022
LORNG_SW11008_06212022
LORNG_SW11009_06212022
LORNG_LT19_SW_07072022
LORNG_LMR_001_SW_07082022
LORNG_SW19004_07072022
LORNG_LT02_SW_07082022FD
LORNG_LT13A_SW_07082022
LORNG_SW22001_07082022FD
LORNG_LT1006_SW_07082022
LORNG_LT02_SW_07082022
LORNG_LT14_SW_07082022
LORNG_LT18_SW_07082022
LORNG_LT13_SW_07082022
LORNG_LMR_002_SW_07082022
LORNG_LS_003_SW_07072022
LORNG_LT15_SW_07082022
LORNG_SW22003_07082022
LORNG_LT14A_SW_07072022
LORNG_HSSG01_07202022
LORNG_LS_002_SW_07202022
LORNG_HSSG02_07212022
LORNG_HSSG04_07212022
LORNG_HSSG05_07212022
LORNG_HSSG05_07212022FD
LORNG_LT04_SW_07112022
LORNG_LT04_SW_07112022FD
LORNG_SW08002_07112022
LORNG_SW08002_07112022FD
LORNG_SW09002_07112022
LORNG_SW11007_07112022
LORNG_SW12011_07112022
LORNG_SW21001_07112022
LORNG_WBGB_002_SW_07112022

LORNG_WBGB_003_SW_07112022
LORNG_LT03_SW_07112022
LORNG_SD12010_07122022
LORNG_SW11005_07122022
LORNG_SW11006_07122022
LORNG_SW12010_07122022
LORNG_WLVB_001_SD_07112022
LORNG_WLVB_001_SW_07112022
LORNG_SWI_007_SW_08062022
LORNG_EBGB_001_SW_07092022
LORNG_EBGB_006_SW_07092022
LORNG_EBGB_006_SW_07092022FD
LORNG_SW17006_07092022
LORNG_BB_001_SW_07092022
LORNG_WLB_001_SW_07092022
LORNG_SW16005_07102022
LORNG_SW16005_07102022FD
LORNG_SW17007_07092022
LORNG_EBGB_002_SW_07102022
LORNG_LT05_SW_07102022
LORNG_LT05A_SW_07102022
LORNG_SW05001_07102022
LORNG_SW16006_07102022
LORNG_EBGB_005_SD_07102022
LORNG_EBGB_005_SW_07102022
LORNG_LS_001_SW_07102022
LORNG_EBGB_003_SW_07092022
LORNG_WBGB_005_SW_07102022
LORNG_LT1002_SW_07102022
LORNG_LT1002_SW_07102022FD
LORNG_SW21003_07102022
LORNG_SW21004_07102022
LORNG_HSSG03_07222022
LORNG_HSSG06_07222022
LORNG_SWI_006_SW_08052022
LORNG_SWI_002_SW_08052022
LORNG_ FHSSO01_09192022
LORNG_ FHSSO02_09192022
LORNG_NP_001_SW_07202022
LORNG_LT1001_SW_07102022
LORNG_LT1005_SW_07092022

Reporting limits for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

LORNG_SD18004_06192022

LORNG_SD11004_06212022
LORNG_SD11008_06212022
LORNG_SW22001_07082022
LORNG_SW22002_07082022
LORNG_LT15_SD_07082022
LORNG_LT13_SD_07082022
LORNG_HSSO01_07202022
LORNG_LS_002_SD_07202022
LORNG_HSSO02_07212022
LORNG_HSSO05_07212022
LORNG_HSSO05_07212022FD
LORNG_SD12011_07112022
LORNG_WBGB_002_SD_07112022
LORNG_SW12009_07122022FD
LORNG_HSSG08_07222022
LORNG_HSSO03_07222022
LORNG_HSSO08_07222022
LORNG_ FHSSO03_09192022
LORNG_GB_003_SW_07072022
LORNG_GB_004_SD_07072022
LORNG_LT16_SD_07072022
LORNG_LT16_SD_07072022FD
LORNG_WBGB_SED001_FP_07062022
LORNG_WBGB_SED003_FP_07062022
LORNG_EBGB_006_SD_07092022FD
LORNG_WBGB_004_SD_07102022
LORNG_WBGB_004_SW_07102022
LORNG_WBGB_005_SD_07102022

The EIS percent recoveries associated with Perfluorooctane sulfonamide (PFOSA) and perfluorotetradecanoic acid (PFTeDA) in sample LORNG_AA20SW01_06182022 were less than the lower QC acceptance limit of 50. The results for PFOSA, PFTeDA, and perfluorotridecanoic acid (PFTrDA) in sample LORNG_AA20SW01_06182022 were qualified as estimated (UJ).

The EIS percent recoveries associated with PFTeDA in sample LORNG_AA20SW02_06182022 were less than the lower QC acceptance limit of 50. The EIS recoveries associated with PFOSA in sample LORNG_AA20SW02_06182022 was less than the rejectable limit of 20. The results for PFTeDA, and PFTrDA in sample LORNG_AA20SW01_06182022 were qualified as estimated (UJ). PFOSA was not detected in sample LORNG_AA20SW02_06182022 and the reporting limit was qualified as rejected (R).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_SD18004_06192022 were less than the lower QC acceptance limit of 50. The results for the subset of parameters in sample LORNG_SD18004_06192022 were qualified as estimated (UJ/J).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_SD18005_06192022 were less than the lower QC acceptance limit of 50. The results for the subset of parameters in sample LORNG_SD18005_06192022 were qualified as estimated (UJ/J).

The EIS percent recoveries associated with PFTeDA and PFOSA in sample LORNG_SW18002_06182022 were less than the rejectable limit of 20. The results for PFOSA, FOSA, PFTeDA, and PFTrDA in sample LORNG_SW18002_06182022 were not detected and the reporting limits were qualified as rejected (R).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_SW18004_06192022 were less than the lower QC acceptance limit of 50. The EIS recoveries associated with PFOSA in sample LORNG_SW18004_06192022 was less than the rejectable limit of 20. The results for the subset of parameters in sample LORNG_SW18004_06192022 were qualified as estimated (UJ). PFOSA was not detected in sample LORNG_SW18004_06192022 and the reporting limits were qualified as rejected (R).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_SW18005_06192022 were less than the lower QC acceptance limit of 50. The EIS recoveries associated with PFOSA in sample LORNG_SW18005_06192022 was less than the rejectable limit of 20. The results for the subset of parameters in sample LORNG_SW18005_06192022 were qualified as estimated (UJ). PFOSA was not detected in sample LORNG_SW18005_06192022 and the reporting limits were qualified as rejected (R).

The EIS percent recoveries associated with PFOSA and PFTeDA in sample LORNG_AA19SW02_07072022 were less than the lower QC acceptance limit of 50. The EIS recovery associated with N-MEFOSA in sample LORNG_AA19SW02_07072022 was less than the rejectable limit of 20. The results for PFOSA, PFTeDA, and perfluorotridecanoic acid (PFTrDA) in sample LORNG_AA19SW02_07072022 were qualified as estimated (UJ). N-MEFOSA was not detected in sample LORNG_AA19SW02_07072022 and the reporting limit was qualified as rejected (R).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_AA19SW03_07072022 were less than the lower QC acceptance limit of 50. The EIS recoveries associated with PFTeDA in sample LORNG_AA19SW03_07072022 was less than the rejectable limit of 20. The results for the subset of parameters in sample LORNG_AA19SW03_07072022 were qualified as estimated (UJ). PFTeDA was not detected in sample LORNG_AA19SW03_07072022 and the reporting limits were qualified as rejected (R).

The EIS percent recovery associated with PFOSA in sample LORNG_LT16_SW_07072022 was less than the lower QC acceptance limit of 50. The EIS recovery associated with PFTeDA in sample LORNG_LT16_SW_07072022 was less than the rejectable limit of 20. The results for PFOSA in sample LORNG_LT16_SW_07072022 was qualified as estimated (UJ). PFTeDA was not detected in sample LORNG_LT16_SW_07072022 and the reporting limit was qualified as rejected (R).

The EIS percent recoveries associated with PFOSA and PFTeDA in sample LORNG_LT16_SW_07072022FD were less than the lower QC acceptance limit of 50. The results

for PFOSA, PFTeDA, and PFTrDA sample LORNG_LT16_SW_07072022FD was qualified as estimated (UJ).

The EIS percent recovery associated with PFOSA in sample LORNG_SW11004_06212022 was less than the lower QC acceptance limit of 50. PFOSA was not detected in sample LORNG_SW11004_06212022 and the reporting limit was qualified as estimated (UJ).

The EIS percent recovery associated with PFTeDA in sample LORNG_SW11008_06212022 was less than the lower QC acceptance limit of 50. The EIS recoveries associated with PFOSA in sample LORNG_SW11008_06212022 was less than the rejectable limit of 20. PFTeDA was not detected in sample LORNG_SW11008_06212022 and the reporting limit was qualified as estimated (UJ). PFOSA was not detected in sample LORNG_SW11008_06212022 and the reporting limits were qualified as rejected (R).

The EIS percent recoveries associated with PFTeDA and PFOSA in sample LORNG_SW11009_06212022 were less than the rejectable limit of 20. PFTeDA and PFOSA were not detected in sample LORNG_SW11009_06212022 and the reporting limits were qualified as rejected (R).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_LT19_SW_07072022 were less than the lower QC acceptance limit of 50. The results for the subset of parameters in sample LORNG_LT19_SW_07072022 were qualified as estimated (UJ/J).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_LMR_001_SW_07082022 were less than the lower QC acceptance limit of 50. The results for the subset of parameters in sample LORNG_LMR_001_SW_07082022 were qualified as estimated (UJ/J).

The EIS percent recoveries associated with subsets of parameters in samples LORNG_SW19004_07072022, LORNG_LT02_SW_07082022FD, LORNG_LT13A_SW_07082022, LORNG_SW22001_07082022FD, LORNG_SW22002_07082022, LORNG_LT1006_SW_07082022 were less than the lower QC acceptance limit of 50. The results for the subsets of parameters in the associated samples were qualified as estimated (UJ/J).

The EIS percent recoveries associated with perfluorobutanoic acid (PFBA) in samples LORNG_LT02_SW_07082022 and LORNG_SW22001_07082022 were less than the lower QC acceptance limit of 50. The results for PFBA in sample LORNG_SW22001_07082022 and LORNG_LT02_SW_07082022 were qualified as estimated (UJ/J).

The EIS percent recovery associated with PFOSA in sample LORNG_LT15_SD_07082022 was less than the lower QC acceptance limit of 50. PFOSA was not detected in sample LORNG_LT15_SD_07082022 and were qualified as estimated (UJ).

The EIS percent recovery associated with PFTeDA in sample LORNG_LT14_SW_07082022 was less than the lower QC acceptance limit of 50. PFTeDA was not detected in sample LORNG_LT14_SW_07082022 and was qualified as estimated (UJ).

The EIS percent recoveries associated with subsets of parameters in samples LORNG_LMR_002_SW_07082022, LORNG_LT18_SW_07082022, and LORNG_LT13_SW_07082022 were less than the lower QC acceptance limit of 50. The results for the subsets of parameters in the associated samples were qualified as estimated (UJ/J).

The EIS percent recoveries associated with subsets of parameters in samples LORNG_LS_003_SW_07072022, LORNG_LT15_SW_07082022, LORNG_SW22003_07082022 were less than the lower QC acceptance limit of 50. The results for the subsets of parameters in the associated samples were qualified as estimated (UJ/J).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_LT14A_SW_07072022 were less than the lower QC acceptance limit of 50. The subset of parameters was not detected in sample LORNG_LT14A_SW_07072022 and was qualified as estimated (UJ).

The EIS percent recoveries associated with PFTeDA, PFOSA, and PFBA in samples LORNG_HSSG01_07202022 and LORNG_LS_002_SW_07202022 were less than the lower QC acceptance limit of 50. The reporting limits for PFBA, PFTeDA, and PFOSA in samples LORNG_HSSG01_07202022 and LORNG_LS_002_SW_07202022 were qualified as estimated (J/UJ).

The EIS percent recovery associated with PFTeDA and PFOSA in samples LORNG_HSSG02_07212022, LORNG_HSSG04_07212022, and LORNG_HSSG05_07212022 were less than the lower QC acceptance limit of 50. PFTeDA and PFOSA were not detected in samples LORNG_HSSG02_07212022, LORNG_HSSG04_07212022, and LORNG_HSSG05_07212022 and reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with PFBA, PFTeDA, and PFOSA in sample LORNG_HSSG05_07212022FD were less than the lower QC acceptance limit of 50. The results for PFBA, PFTeDA, and PFOSA in samples LORNG_HSSG05_07212022FD were qualified as estimated (J/UJ).

The EIS percent recoveries associated with PFOSA in samples LORNG_LT04_SW_07112022FD, LORNG_WBGB_002_SW_07112022, and LORNG_WBGB_003_SW_07112022 were less than the lower QC acceptance limit of 50. PFOSA was not detected in samples LORNG_LT04_SW_07112022FD, LORNG_WBGB_002_SW_07112022, and LORNG_WBGB_003_SW_07112022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with PFBA and PFTeDA in sample LORNG_SW21001_07112022 were less than the lower QC acceptance limit of 50. The results for PFBA and PFTeDA in sample LORNG_SW21001_07112022 were qualified as estimated (J/UJ).

The EIS percent recovery associated with PFOSA in sample LORNG_SW08002_07112022 was less than the lower QC acceptance limit of 50. PFOSA was detected in sample LORNG_SW08002_07112022 and the result was qualified as estimated (J).

The EIS percent recovery associated with PFTeDA in samples LORNG_LT03_SW_07112022, LORNG_SW12007_07122022 and LORNG_SW12009_07122022 were less than the lower QC acceptance limit of 50. PFTeDA was not detected in samples LORNG_LT03_SW_07112022, LORNG_SW12007_07122022 and LORNG_SW12009_07122022 and reporting limits were qualified as estimated (UJ).

The EIS percent recovery associated with PFTeDA in sample LORNG_SW12009_07122022FD was less than the lower QC acceptance limit of 50. PFTeDA was not detected in sample LORNG_SW12009_07122022FD and reporting limit was qualified as estimated (UJ).

The EIS percent recovery associated with PFOSA in sample LORNG_SWI_007_SW_08062022 was less than the lower QC acceptance limit of 50. PFOSA was not detected in sample LORNG_SWI_007_SW_08062022 and the reporting limit was qualified as estimated (UJ).

The EIS percent recovery associated with PFOSA in samples LORNG_EBGB_006_SW_07092022, LORNG_SW16005_07102022, and LORNG_EBGB_005_SW_07102022 was less than the rejection limit of 20. PFOSA was not detected in samples LORNG_EBGB_006_SW_07092022, LORNG_SW16005_07102022, and LORNG_EBGB_005_SW_07102022 and the reporting limits were qualified as rejected (R).

The EIS recoveries associated with PFTeDA in samples LORNG_SW16005_07102022, LORNG_EBGB_002_SW_07102022, LORNG_EBGB_005_SW_07102022, LORNG_LS_001_SW_07102022, and LORNG_SW21003_07102022 were less than the rejection limit of 20. PFOSA was not detected in samples LORNG_SW16005_07102022, LORNG_EBGB_002_SW_07102022, LORNG_EBGB_005_SW_07102022, LORNG_LS_001_SW_07102022, and LORNG_SW21003_07102022 and the reporting limits were qualified as rejected (R).

The EIS recovery associated with N-EtFOSAA in sample LORNG_SW21003_07102022 was less than the lower QC acceptance limit of 50. The result for N-EtFOSAA in sample LORNG_SW21003_07102022 was qualified as estimated (UJ).

The EIS recoveries associated with PFBA in samples LORNG_EBGB_006_SW_07092022, LORNG_EBGB_006_SW_07092022FD, and LORNG_LT005A_SW_07102022 were less than the lower QC acceptance limit of 50. The results for PFBA in the associated samples were qualified as estimated (UJ).

The EIS recoveries associated with PFBA in a subset of samples in SDG FA97236 were less than the lower QC acceptance limit of 50. PFBA was detected in the associated samples and the results were qualified as estimated (J).

The EIS recoveries associated with PFDoA in a subset of samples in SDG FA97236 were less than the lower QC acceptance limit of 50. PFDoA was not detected in the associated samples and the results were qualified as estimated (UJ).

The EIS recovery associated with perfluoroheptanesulfonic acid (PFHpA) in sample LORNG_EBGB_005_SW_07102022 was less than the lower QC acceptance limit of 50. PFHpA

was detected in sample LORNG_EBGB_005_SW_07102022 and the result was qualified as estimated (J).

The EIS recoveries associated with PFOSA in samples LORNG_EBGB_006_SW_07092022, LORNG_SW16005_07102022, and LORNG_EBGB_005_SW_07102022 were less than the rejection limit of 20. PFOSA was not detected in samples LORNG_EBGB_006_SW_07092022, LORNG_SW16005_07102022, and LORNG_EBGB_005_SW_07102022 and the reporting limits were qualified as rejected (R).

The EIS recoveries associated with PFOSA in a subset of samples in SDG FA97236 were less than the lower QC acceptance limit of 50. PFOSA was not detected in the associated samples and the reporting limits were qualified as estimated (UJ).

The EIS recoveries associated with PFOSA in samples LORNG_SW05001_07102022 and LORNG_SW21004_were less than the lower QC acceptance limit of 50. PFOSA was detected in samples LORNG_SW05001_07102022 and LORNG_SW21004_and the results were qualified as estimated (J).

The EIS recoveries associated with PFTeDA in a subset of samples in SDG FA97236 were less than the lower QC acceptance limit of 50. PFTeDA was not detected in the associated samples and the reporting limits were qualified as estimated (UJ).

The EIS recoveries associated with PFTrDA in a subset of samples in SDG FA97236 were less than the lower QC acceptance limit of 50. PFTrDA was not detected in the associated samples and the reporting limits were qualified as estimated (UJ).

The EIS recoveries associated with PFUnDA in samples LORNG_EBGB_002_SW_07102022, LORNG_WBGB_005_SW_07102022, and LORNG_SW21003_07102022 were less than the lower QC acceptance limit of 50. PFUnDA was not detected in samples LORNG_EBGB_002_SW_07102022, LORNG_WBGB_005_SW_07102022, and LORNG_SW21003_07102022 and the reporting limits were qualified as estimated (UJ).

The EIS percent recoveries associated with PFOSA and PFTeDA in sample LORNG_HSSG03_07222022 were less than the lower QC acceptance limit of 50. The results for PFOSA, PFTeDA, and PFTrDA in sample LORNG_HSSG03_07222022 were qualified as estimated (UJ).

The EIS percent recoveries associated with PFOSA, PFDoA, PFTrDA and PFTeDA in sample LORNG_HSSG06_07222022 were less than the lower QC acceptance limit of 50. The results for PFDoA, PFOSA, PFTeDA, and PFTrDA in sample LORNG_HSSG06_07222022 were qualified as estimated (UJ).

The EIS percent recoveries associated with N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) and N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) in sample LORNG_HSSO03_07222022 were less than the lower QC acceptance limit of 50. The results for N-MeFOSAA and N-EtFOSAA in sample LORNG_HSSO03_07222022 were qualified as estimated (UJ).

The EIS percent recoveries associated with PFOSA and PFTeDA in sample LORNG_SWI_002_SW_08052022 were less than the lower QC acceptance limit of 50. The results for PFOSA, PFTrDA and PFTeDA in sample LORNG_SWI_002_SW_08052022 were qualified as estimated (UJ).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_ FHSSO01_09192022 were lower than the lower QC acceptance limit of 50. The results the subset of parameters in sample LORNG_ FHSSO01_09192022 were qualified as estimated (UJ).

The EIS percent recoveries associated with a subset of parameters in sample LORNG_ FHSSO02_09192022 were lower than the lower QC acceptance limit of 50. The results the subset of parameters in sample LORNG_ FHSSO02_09192022 were qualified as estimated (UJ).

The EIS recovery associated with PFDoA in sample LORNG_ FHSSO03_09192022 were lower QC acceptance limit of 50. PFDoA and PFTrDA were not detected in sample LORNG_ FHSSO03_09192022 and reporting limits were qualified as estimated (UJ).

2.2 TOC

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
  Field Duplicates
  Laboratory Duplicates
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.2.1 Field Duplicates

170701 – The results for total organic carbon in sample LORNG_LT16_SD_07072022_C and its associated field duplicate LORNG_LT16_SD_07072022FD_C were qualified as estimated (J) due to the field duplicate RPD exceeding project limits (108).

170702 – The results for total organic carbon in sample LORNG_LT02_SD_07082022_C and its associated field duplicate LORNG_LT02_SD_07082022FD_C were qualified as estimated (J) due to the field duplicate RPD exceeding project limits (113).

170731 – The results for total organic carbon in sample LORNG_LT1002_SD_07102022_C and its associated field duplicate LORNG_LT1002_SD_07102022FD_C were qualified as estimated (J) due to the field duplicate RPD exceeding project limits (76).

170731 – The results for total organic carbon in sample LORNG_SD16005_07102022_C and its associated field duplicate LORNG_SD16005_071092022FD_Cwere qualified as estimated (J) due to the field duplicate RPD exceeding project limits (138).

2.2.2 Laboratory Duplicates

170701 – The result for total organic carbon in sample LORNG_LT1006A_SD_07072022_C was qualified as estimated (J) due to the laboratory duplicate RPD (61) that exceeded project limits.

170702 – The result for total organic carbon in sample LORNG_LT14_SD_07082022_C was qualified as estimated (J) due to the laboratory duplicate RPD (84) that exceeded project limits.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Amber Jones



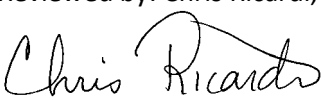
December 8, 2022

Reviewed by: Julie Ricardi



December 8, 2022

Reviewed by: Chris Ricardi, NRCC-EAC



December 14, 2022

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
170361	SW/SD11004	LORNG-SD11004_06212022_CT	1157234	6/21/2022	SE	N		1
	SW/SD11008	LORNG-SD11008_06212022_CT	1157235	6/21/2022	SE	N		1
	SW/SD11009	LORNG-SD11009_06212022_CT	1157236	6/21/2022	SE	N		1
170362	AA20SD-01	LORNG_AA20SD01_06182022_CT	1157237	6/18/2022	SE	N		1
	AA20SD-02	LORNG_AA20SD02_06182022_CT	1157238	6/18/2022	SE	N		1
	SW/SD18002	LORNG_SD18002_06182022_CT	1157239	6/18/2022	SE	N		1
	SW/SD18004	LORNG_SD18004_06192022_CT	1157240	6/19/2022	SE	N		1
	SW/SD18005	LORNG_SD18005_06192022_CT	1157241	6/19/2022	SE	N		1
170701	GB_003	LORNG_GB_003_SD_07072022_C	1162823	7/7/2022	SE	N		1
	GB_004	LORNG_GB_004_SD_07072022_C	1162825	7/7/2022	SE	N		1
	LORNG-LT-10-06A	LORNG_LT1006A_SD_07072022_C	1162826	7/7/2022	SE	N		1
	LT-16	LORNG_LT16_SD_07072022_C	1162824	7/7/2022	SE	N		1
		LORNG_LT16_SD_07072022FD_C	1162827	7/7/2022	SE	FD		1
	LT-17	LORNG_LT17_SD_07072022_C	1162828	7/7/2022	SE	N		1
170702	LMR_001	LORNG_LMR_001_07082022_C	1162833	7/8/2022	SE	N		1
	LMR_002	LORNG_LMR_002_07082022_C	1162829	7/8/2022	SE	N		1
	LORNG-LT-02	LORNG_LT02_SD_07082022_C	1162834	7/8/2022	SE	N		1
		LORNG_LT02_SD_07082022FD_C	1162835	7/8/2022	SE	FD		1
	LORNG-LT-10-06	LORNG_LT1006_SD_07082022_C	1162843	7/8/2022	SE	N		1
	LORNG-LT-13	LORNG_LT13_SD_07082022_C	1162838	7/8/2022	SE	N		1
	LORNG-LT-13A	LORNG_LT13A_SD_07082022_C	1162839	7/8/2022	SE	N		1
	LORNG-LT-14	LORNG_LT14_SD_07082022_C	1162836	7/8/2022	SE	N		1
	LORNG-LT-14A	LORNG_LT14A_SD_07072022_C	1162831	7/7/2022	SE	N		1
	LORNG-LT-15	LORNG_LT15_SD_07082022_C	1162844	7/8/2022	SE	N		1
	LS_003	LORNG_LS_003_SD_07072022_C	1162830	7/7/2022	SE	N		1
	LT18	LORNG_LT18_SD_07082022_C	1162837	7/8/2022	SE	N		1
	LT19	LORNG_LT19_SD_07072022_C	1162832	7/7/2022	SE	N		1
	SD22001	LORNG_SD22001_07082022FD_C	1162845	7/8/2022	SE	FD		1
		LORNG_SD22001_SD_07082022_C	1162840	7/8/2022	SE	N		1
	SD22002	LORNG_SD22002_SD_07082022_C	1162841	7/8/2022	SE	N		1
	SD22003	LORNG_SD22003_SD_07082022_C	1162842	7/8/2022	SE	N		1

Prepared by:AKN
Date:11/8/22
Checked by:ALJ
Date: 12/6/22

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					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
170731	BB_001	LORNG_BB_001_SD_07092022_C	1163416	7/9/2022	SE	N		1
	EBGB_001	LORNG_EBGB_001_SD_07092022_C	1163419	7/9/2022	SE	N		1
	EBGB_002	LORNG_EBGB_002_07102022_C	1163427	7/10/2022	SE	N		1
	EBGB_003	LORNG_EBGB_003_SD_07092022_C	1163417	7/9/2022	SE	N		1
	EBGB_005	LORNG_EBGB_005_SD_07102022_C	1163431	7/10/2022	SE	N		1
	EBGB_006	LORNG_EBGB_006_SD_07092022_C	1163420	7/9/2022	SE	N		1
		LORNG_EBGB_006_SD_7092022FD_C	1163423	7/9/2022	SE	FD		1
	LORNG-LT-05A	LORNG_LT05A_SD_07102022_C	1163429	7/10/2022	SE	N		1
	LORNG-LT-10-01	LORNG_LT1001_SD_07102022_C	1163433	7/10/2022	SE	N		1
	LORNG-LT-10-02	LORNG_LT1002_SD_07102022_C	1163434	7/10/2022	SE	N		1
		LORNG_LT1002_SD_07102022FD_C	1163435	7/10/2022	SE	FD		1
	LORNG-LT-10-05	LORNG_LT1005_SD_07092022_C	1163418	7/9/2022	SE	N		1
	LS_001	LORNG_LS_001_SD_07102022_C	1163432	7/10/2022	SE	N		1
	LT-05	LORNG_LT05_SD_07102022_C	1163428	7/10/2022	SE	N		1
	SW/SD16005	LORNG_SD16005_07102022_C	1163424	7/10/2022	SE	N		1
		LORNG_SD16005_071092022FD_C	1163425	7/10/2022	SE	FD		1
	SW/SD16006	LORNG_SD16006_07102022_C	1163430	7/10/2022	SE	N		1
	SW/SD17006	LORNG_SD17006_07092022_C	1163421	7/9/2022	SE	N		1
	SW/SD17007	LORNG_SD17007_07092022_C	1163426	7/9/2022	SE	N		1
	SW/SD21003	LORNG_SD21003_07102022_C	1163436	7/10/2022	SE	N		1
	WBGB_004	LORNG_WBGB_004_SD_07102022_C	1163437	7/10/2022	SE	N		1
	WBGB_005	LORNG_WBGB_005-SD_07102022_C	1163438	7/10/2022	SE	N		1
	WLB_001	LORNG_WLB_001_SD_07092022_C	1163422	7/9/2022	SE	N		1
170732	LT-04	LORNG_LT04_SD_07112022_C	1163439	7/11/2022	SE	N		1
		LORNG_LT04_SD_07112022FD_C	1163443	7/11/2022	SE	FD		1
	SD08002	LORNG_SD08002_07112022_C	1163448	7/11/2022	SE	N		1
	SD21001	LORNG_SD21001_07112022_C	1163446	7/11/2022	SE	N		1
	SD21002	LORNG_SD21002_07112022_C	1163447	7/11/2022	SE	N		1
	SD8002	LORNG_SD8002_07112022FD_C	1163449	7/11/2022	SE	FD		1
	SD9002	LORNG_SD9002_07112022_C	1163444	7/11/2022	SE	N		1
	SW/SD11007	LORNG_SD11007_07112022_C	1163445	7/11/2022	SE	N		1
	SW/SD12011	LORNG_SD12011_07112022_C	1163450	7/11/2022	SE	N		1
	WBGB_002	LORNG_WBGB_002_SD_07112022_C	1163451	7/11/2022	SE	N		1
	WBGB_003	LORNG_WBGB_003_SD_07112022_C	1163452	7/11/2022	SE	N		1

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Checked by:ALJ
Date: 12/6/22

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem
						Analysis Method	M537	LYDKHN
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA96676	AA20SD-01	LORNG_AA20SD01_06182022	FA96676-1	6/18/2022	SE	N	25	
		LORNG_AA20SW01_06182022	FA96676-4	6/18/2022	WS	N	25	
	AA20SD-02	LORNG_AA20SD02_06182022	FA96676-2	6/18/2022	SE	N	25	
		LORNG_AA20SD02_06182022FD	FA96676-3	6/18/2022	SE	FD	25	
		LORNG_AA20SW02_06182022	FA96676-5	6/18/2022	WS	N	25	
	SW/SD18002	LORNG_SD18002_06182022	FA96676-6	6/18/2022	SE	N	25	
		LORNG_SW18002_06182022	FA96676-9	6/18/2022	WS	N	25	
	SW/SD18004	LORNG_SD18004_06192022	FA96676-7	6/19/2022	SE	N	25	
		LORNG_SW18004_06192022	FA96676-10	6/19/2022	WS	N	25	
	SW/SD18005	LORNG_SD18005_06192022	FA96676-8	6/19/2022	SE	N	25	
		LORNG_SW18005_06192022	FA96676-11	6/19/2022	WS	N	25	
FA96725	SW/SD11004	LORNG_SD11004_06212022	FA96725-1	6/21/2022	SE	N	25	
		LORNG_SW11004_06212022	FA96725-4	6/21/2022	WS	N	25	
	SW/SD11008	LORNG_SD11008_06212022	FA96725-2	6/21/2022	SE	N	25	
		LORNG_SW11008_06212022	FA96725-5	6/21/2022	WS	N	25	
	SW/SD11009	LORNG_SD11009_06212022	FA96725-3	6/21/2022	SE	N	25	
		LORNG_SW11009_06212022	FA96725-6	6/21/2022	WS	N	25	
FA97084	EBGB_SED001	LORNG_EBGB_SED001_FP_07062022	FA97084-1	7/6/2022	SE	N	25	
	EBGB_SED002	LORNG_EBGB_SED002_FP_07062022	FA97084-2	7/6/2022	SE	N	25	
	EBGB_SED003	LORNG_EBGB_SED003_FP_07062022	FA97084-3	7/6/2022	SE	N	25	
	EBGB_SED004	LORNG_EBGB_SED004_FP_07062022	FA97084-4	7/6/2022	SE	N	25	
FA97153	AA19SW-02	LORNG_AA19SW02_07072022	FA97153-1	7/7/2022	WS	N	25	
	AA19SW-03	LORNG_AA19SW03_07072022	FA97153-2	7/7/2022	WS	N	25	
	FIELDQC	LORNG_EB200_07062022	FA97153-3	7/6/2022	WQ	EB	25	
	GB_003	LORNG_GB_003_SD_07072022	FA97153-4	7/7/2022	SE	N	25	
		LORNG_GB_003_SW_07072022	FA97153-5	7/7/2022	WS	N	25	
	GB_004	LORNG_GB_004_SD_07072022	FA97153-11	7/7/2022	SE	N	25	
		LORNG_GB_004_SW_07072022	FA97153-12	7/7/2022	WS	N	25	
	LORNG-LT-10-06A	LORNG_LT1006A_SD_07072022	FA97153-13	7/7/2022	SE	N	25	
		LORNG_LT1006A_SW_07072022	FA97153-14	7/7/2022	WS	N	25	
	LT-16	LORNG_LT16_SD_07072022	FA97153-6	7/7/2022	SE	N	25	
		LORNG_LT16_SD_07072022FD	FA97153-15	7/7/2022	SE	FD	25	
		LORNG_LT16_SW_07072022	FA97153-7	7/7/2022	WS	N	25	
		LORNG_LT16_SW_07072022FD	FA97153-8	7/7/2022	WS	FD	25	
	LT-17	LORNG_LT17_SD_07072022	FA97153-16	7/7/2022	SE	N	25	
		LORNG_LT17_SW_07072022	FA97153-17	7/7/2022	WS	N	25	
	WBGB_SED001	LORNG_WBGB_SED001_FP_07062022	FA97153-9	7/6/2022	SE	N	25	
	WBGB_SED003	LORNG_WBGB_SED003_FP_07062022	FA97153-10	7/6/2022	SE	N	25	

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June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA97181	FIELDQC	LORNG_EB201_07072022	FA97181-1	7/7/2022	WQ	EB	25	
		LORNG_EB202_07072022	FA97181-2	7/7/2022	WQ	EB	25	
	LMR_001	LORNG_LMR_001_SD_07082022	FA97181-13	7/8/2022	SE	N	25	
		LORNG_LMR_001_SW_07082022	FA97181-14	7/8/2022	WS	N	25	
	LMR_002	LORNG_LMR_002_SD_07082022	FA97181-3	7/8/2022	SE	N	25	
		LORNG_LMR_002_SW_07082022	FA97181-4	7/8/2022	WS	N	25	
	LORNG-LT-10-06	LORNG_LT1006_SD_07082022	FA97181-33	7/8/2022	SE	N	25	
		LORNG_LT1006_SW_07082022	FA97181-34	7/8/2022	WS	N	25	
	LORNG-LT-13A	LORNG_LT13A_SD_07082022	FA97181-24	7/8/2022	SE	N	25	
		LORNG_LT13A_SW_07082022	FA97181-25	7/8/2022	WS	N	25	
	LORNG-LT-14A	LORNG_LT14A_SD_07072022	FA97181-7	7/7/2022	SE	N	25	
		LORNG_LT14A_SW_07072022	FA97181-8	7/7/2022	WS	N	25	
	LS_003	LORNG_LS_003_SD_07072022	FA97181-5	7/7/2022	SE	N	25	
		LORNG_LS_003_SW_07072022	FA97181-6	7/7/2022	WS	N	25	
	LT-13	LORNG_LT13_SD_07082022	FA97181-22	7/8/2022	SE	N	25	
		LORNG_LT13_SW_07082022	FA97181-23	7/8/2022	WS	N	25	
	LT-14	LORNG_LT14_SD_07082022	FA97181-19	7/8/2022	SE	N	25	
		LORNG_LT14_SW_07082022	FA97181-20	7/8/2022	WS	N	25	
	LT-15	LORNG_LT15_SD_07082022	FA97181-35	7/8/2022	SE	N	25	
		LORNG_LT15_SW_07082022	FA97181-36	7/8/2022	WS	N	25	
	LT18	LORNG_LT18_SD_07082022	FA97181-21	7/8/2022	SE	N	25	
		LORNG_LT18_SW_07082022	FA97181-9	7/8/2022	WS	N	25	
	LT19	LORNG_LT19_SD_07072022	FA97181-10	7/7/2022	SE	N	25	
		LORNG_LT19_SW_07072022	FA97181-11	7/7/2022	WS	N	25	
	LT2	LORNG_LT02_SD_07082022	FA97181-15	7/8/2022	SE	N	25	
		LORNG_LT02_SD_07082022FD	FA97181-16	7/8/2022	SE	FD	25	
		LORNG_LT02_SW_07082022	FA97181-17	7/8/2022	WS	N	25	
		LORNG_LT02_SW_07082022FD	FA97181-18	7/8/2022	WS	FD	25	
	SD22001	LORNG_SD22001_07082022	FA97181-26	7/8/2022	SE	N	25	
		LORNG_SD22001_07082022FD	FA97181-37	7/8/2022	SE	FD	25	
	SD22002	LORNG_SD22002_07082022	FA97181-27	7/8/2022	SE	N	25	
	SD22003	LORNG_SD22003_07082022	FA97181-28	7/8/2022	SE	N	25	

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Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount
FA97181	SW19004	LORNG_SW19004_07072022	FA97181-12	7/7/2022	WS	N	25	
	SW22001	LORNG_SW22001_07082022	FA97181-29	7/8/2022	WS	N	25	
		LORNG_SW22001_07082022FD	FA97181-30	7/8/2022	WS	FD	25	
	SW22002	LORNG_SW22002_07082022	FA97181-31	7/8/2022	WS	N	25	
	SW22003	LORNG_SW22003_07082022	FA97181-32	7/8/2022	WS	N	25	
FA97218	FIELDQC	LORNG_EB212_07112022	FA97218-13	7/11/2022	WQ	EB	25	
	LT-04	LORNG_LT04_SD_07112022	FA97218-1	7/11/2022	SE	N	25	
		LORNG_LT04_SD_07112022FD	FA97218-2	7/11/2022	SE	FD	25	
		LORNG_LT04_SW_07112022	FA97218-3	7/11/2022	WS	N	25	
		LORNG_LT04_SW_07112022FD	FA97218-4	7/11/2022	WS	FD	25	
	SD21002	LORNG_SD21002_07112022	FA97218-8	7/11/2022	SE	N	25	
	SW/SD08002	LORNG_SD08002_07112022	FA97218-14	7/11/2022	SE	N	25	
		LORNG_SD08002_07112022FD	FA97218-15	7/11/2022	SE	FD	25	
		LORNG_SW08002_07112022	FA97218-17	7/11/2022	WS	N	25	
		LORNG_SW08002_07112022FD	FA97218-18	7/11/2022	WS	FD	25	
	SW/SD09002	LORNG_SD09002_07112022	FA97218-5	7/11/2022	SE	N	25	
		LORNG_SW09002_07112022	FA97218-9	7/11/2022	WS	N	25	
	SW/SD11007	LORNG_SD11007_07112022	FA97218-6	7/11/2022	SE	N	25	
		LORNG_SW11007_07112022	FA97218-10	7/11/2022	WS	N	25	
	SW/SD12011	LORNG_SD12011_07112022	FA97218-16	7/11/2022	SE	N	25	
		LORNG_SW12011_07112022	FA97218-11	7/11/2022	WS	N	25	
	SW/SD21001	LORNG_SD21001_07112022	FA97218-7	7/11/2022	SE	N	25	
		LORNG_SW21001_07112022	FA97218-12	7/11/2022	WS	N	25	
	WBGB_002	LORNG_WBGB_002_SD_07112022	FA97218-19	7/11/2022	SE	N	25	
		LORNG_WBGB_002_SW_07112022	FA97218-20	7/11/2022	WS	N	25	
	WBGB_003	LORNG_WBGB_003_SD_07112022	FA97218-21	7/11/2022	SE	N	25	
		LORNG_WBGB_003_SW_07112022	FA97218-22	7/11/2022	WS	N	25	

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					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA97236	BB_001	LORNG_BB_001_SD_07092022	FA97236-1	7/9/2022	SE	N	25	
		LORNG_BB_001_SW_07092022	FA97236-2	7/9/2022	WS	N	25	
	BB_SED001	LORNG_BB_SED001_FP_07092022	FA97236-25	7/9/2022	SE	N	25	
	BB_SED002	LORNG_BB_SED002_FP_07092022	FA97236-26	7/9/2022	SE	N	25	
	EBGB_001	LORNG_EBGB_001_SD_07092022	FA97236-13	7/9/2022	SE	N	25	
		LORNG_EBGB_001_SW_07092022	FA97236-14	7/9/2022	WS	N	25	
	EBGB_002	LORNG_EBGB_002_SD_07102022	FA97236-38	7/10/2022	SE	N	25	
		LORNG_EBGB_002_SW_07102022	FA97236-39	7/10/2022	WS	N	25	
	EBGB_003	LORNG_EBGB_003_SD_07092022	FA97236-5	7/9/2022	SE	N	25	
		LORNG_EBGB_003_SW_07092022	FA97236-6	7/9/2022	WS	N	25	
	EBGB_005	LORNG_EBGB_005_SD_07102022	FA97236-50	7/10/2022	SE	N	25	
		LORNG_EBGB_005_SW_07102022	FA97236-53	7/10/2022	WS	N	25	
	EBGB_006	LORNG_EBGB_006_SD_07092022	FA97236-15	7/9/2022	SE	N	25	
		LORNG_EBGB_006_SD_07092022FD	FA97236-30	7/9/2022	SE	FD	25	
		LORNG_EBGB_006_SW_07092022	FA97236-16	7/9/2022	WS	N	25	
		LORNG_EBGB_006_SW_07092022FD	FA97236-17	7/9/2022	WS	FD	25	
	FIELDQC	LORNG_EB203_07082022	FA97236-3	7/8/2022	WQ	EB	25	
		LORNG_EB204_07082022	FA97236-4	7/8/2022	WQ	EB	25	
		LORNG_EB205_07092022	FA97236-27	7/9/2022	WQ	EB	25	
		LORNG_EB206_07092022	FA97236-28	7/9/2022	WQ	EB	25	
		LORNG_EB207_07092022	FA97236-29	7/9/2022	WQ	EB	25	
		LORNG_EB208_07102022	FA97236-37	7/10/2022	WQ	EB	25	
		LORNG_EB209_07102022	FA97236-49	7/10/2022	WQ	EB	25	
		LORNG_EB210_07102022	FA97236-61	7/10/2022	WQ	EB	25	
		LORNG_EB211_07102022	FA97236-62	7/10/2022	WQ	EB	25	
	GB_SED001	LORNG_GB_SED001_FP_07092022	FA97236-7	7/9/2022	SE	N	25	
	GB_SED002	LORNG_GB_SED002_FP_07092022	FA97236-8	7/9/2022	SE	N	25	
	LORNG-LT-10-01	LORNG_LT1001_SD_07102022	FA97236-58	7/10/2022	SE	N	25	
		LORNG_LT1001_SW_07102022	FA97236-59	7/10/2022	WS	N	25	
	LORNG-LT-10-02	LORNG_LT1002_SD_07102022	FA97236-63	7/10/2022	SE	N	25	
		LORNG_LT1002_SD_07102022FD	FA97236-64	7/10/2022	SE	FD	25	
		LORNG_LT1002_SW_07102022	FA97236-65	7/10/2022	WS	N	25	
		LORNG_LT1002_SW_07102022FD	FA97236-66	7/10/2022	WS	FD	25	
	LORNG-LT-10-05	LORNG_LT1005_SD_07092022	FA97236-11	7/9/2022	SE	N	25	
		LORNG_LT1005_SW_07092022	FA97236-12	7/9/2022	WS	N	25	
	LS_001	LORNG_LS_001_SD_07102022	FA97236-56	7/10/2022	SE	N	25	
		LORNG_LS_001_SW_07102022	FA97236-57	7/10/2022	WS	N	25	
	LS_SED001	LORNG_LS_SED001_FP_07102022	FA97236-40	7/10/2022	SE	N	25	
	LS_SED002	LORNG_LS_SED002_FP_07102022	FA97236-41	7/10/2022	SE	N	25	
	LT-05	LORNG_LT05_SD_07102022	FA97236-42	7/10/2022	SE	N	25	
		LORNG_LT05_SW_07102022	FA97236-43	7/10/2022	WS	N	25	
		LORNG_LT05A_SD_07102022	FA97236-44	7/10/2022	SE	N	25	
		LORNG_LT05A_SW_07102022	FA97236-45	7/10/2022	WS	N	25	

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Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA97236	SW/SD16005	LORNG_SD16005_07102022	FA97236-31	7/10/2022	SE	N	25	
		LORNG_SD16005_07102022FD	FA97236-32	7/10/2022	SE	FD	25	
		LORNG_SW16005_07102022	FA97236-34	7/10/2022	WS	N	25	
		LORNG_SW16005_07102022FD	FA97236-35	7/10/2022	WS	FD	25	
	SW/SD16006	LORNG_SD16006_07102022	FA97236-46	7/10/2022	SE	N	25	
		LORNG_SW16006_07102022	FA97236-48	7/10/2022	WS	N	25	
	SW/SD17006	LORNG_SD17006_07092022	FA97236-18	7/9/2022	SE	N	25	
		LORNG_SW17006_07092022	FA97236-19	7/9/2022	WS	N	25	
	SW/SD17007	LORNG_SD17007_07092022	FA97236-33	7/9/2022	SE	N	25	
		LORNG_SW17007_07092022	FA97236-36	7/9/2022	WS	N	25	
	SW/SD21003	LORNG_SD21003_07102022	FA97236-67	7/10/2022	SE	N	25	
		LORNG_SW21003_07102022	FA97236-68	7/10/2022	WS	N	25	
	SW05001	LORNG_SW05001_07102022	FA97236-47	7/10/2022	WS	N	25	
	SW21004	LORNG_SW21004_07102022	FA97236-69	7/10/2022	WS	N	25	
	WBGB_004	LORNG_WBGB_004_SD_07102022	FA97236-70	7/10/2022	SE	N	25	
		LORNG_WBGB_004_SW_07102022	FA97236-71	7/10/2022	WS	N	25	
	WBGB_005	LORNG_WBGB_005_SD_07102022	FA97236-72	7/10/2022	SE	N	25	
		LORNG_WBGB_005_SW_07102022	FA97236-60	7/10/2022	WS	N	25	
	WBGB_SED002	LORNG_WBGB_SED002_FP_07092022	FA97236-20	7/9/2022	SE	N	25	
	WBGB_SED004	LORNG_WBGB_SED004_FP_07092022	FA97236-21	7/9/2022	SE	N	25	
		LORNG_WBGB_SED004_FP_07092022F	FA97236-22	7/9/2022	SE	FD	25	
	WLB_001	LORNG_WLB_001_SD_07092022	FA97236-23	7/9/2022	SE	N	25	
		LORNG_WLB_001_SW_07092022	FA97236-24	7/9/2022	WS	N	25	
FA97285	FIELDQC	LORNG_EB213_07112022	FA97285-1	7/11/2022	WQ	EB	25	
	LORNG-LT-03	LORNG_LT03_SD_07112022	FA97285-2	7/11/2022	SD	N	25	
		LORNG_LT03_SW_07112022	FA97285-3	7/11/2022	WS	N	25	
	SW/SD11005	LORNG_SD11005_07122022	FA97285-4	7/12/2022	SD	N	25	
		LORNG_SW11005_07122022	FA97285-6	7/12/2022	WS	N	25	
	SW/SD11006	LORNG_SD11006_07122022	FA97285-5	7/12/2022	SD	N	25	
		LORNG_SW11006_07122022	FA97285-7	7/12/2022	WS	N	25	
	SW/SD12007	LORNG_SD12007_07122022	FA97285-11	7/12/2022	SD	N	25	
		LORNG_SW12007_07122022	FA97285-13	7/12/2022	WS	N	25	
	SW/SD12009	LORNG_SW12009_07122022	FA97285-14	7/12/2022	WS	N	25	
		LORNG_SW12009_07122022FD	FA97285-15	7/12/2022	WS	FD	25	
	SW/SD12010	LORNG_SD12010_07122022	FA97285-12	7/12/2022	SD	N	25	
		LORNG_SW12010_07122022	FA97285-8	7/12/2022	WS	N	25	
	WLVB_001	LORNG_WLVB_001_SD_07112022	FA97285-9	7/11/2022	SD	N	25	
		LORNG_WLVB_001_SW_07112022	FA97285-10	7/11/2022	WS	N	25	

Prepared by:AKN
Date:11/8/22
Checked by:ALJ
Date: 12/6/22

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	WetChem
						Analysis Method	M537	LYDKHN
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA97298	FIELDQC	LORNG_EB214_07122022	FA97298-1	7/12/2022	WQ	EB	25	
FA97560	FIELDQC	LORNG_EB215_07202022	FA97560-1	7/20/2022	WQ	EB	25	
	HSSG01	LORNG_HSSG01_07202022	FA97560-2	7/20/2022	WS	N	25	
	HSSO01	LORNG_HSSO01_07202022	FA97560-3	7/20/2022	SE	N	25	
	LS_002	LORNG_LS_002_SD_07202022	FA97560-4	7/20/2022	SE	N	25	
		LORNG_LS_002_SW_07202022	FA97560-5	7/20/2022	WS	N	25	
	NP_001	LORNG_NP_001_SD_07202022	FA97560-6	7/20/2022	SE	N	25	
		LORNG_NP_001_SW_07202022	FA97560-7	7/20/2022	WS	N	25	
	WBGB_001	LORNG_WBGB_001_SD_07212022	FA97560-9	7/21/2022	SE	N	25	
		LORNG_WBGB_001_SW_07212022	FA97560-8	7/21/2022	WS	N	25	
FA97584	FIELDQC	LORNG_EB216_07212022	FA97584-1	7/21/2022	WQ	EB	25	
	HSSG02	LORNG_HSSG02_07212022	FA97584-2	7/21/2022	WS	N	25	
	HSSG04	LORNG_HSSG04_07212022	FA97584-3	7/21/2022	WS	N	25	
	HSSG05	LORNG_HSSG05_07212022	FA97584-4	7/21/2022	WS	N	25	
		LORNG_HSSG05_07212022FD	FA97584-5	7/21/2022	WS	FD	25	
	HSSO02	LORNG_HSSO02_07212022	FA97584-6	7/21/2022	SE	N	25	
	HSSO04	LORNG_HSSO04_07212022	FA97584-7	7/21/2022	SE	N	25	
	HSSO05	LORNG_HSSO05_07212022	FA97584-8	7/21/2022	SE	N	25	
		LORNG_HSSO05_07212022FD	FA97584-9	7/21/2022	SE	FD	25	
FA97605	FIELDQC	LORNG_EB217_07222022	FA97605-1	7/22/2022	WQ	EB	25	
	HSSG03	LORNG_HSSG03_07222022	FA97605-2	7/22/2022	WS	N	25	
	HSSG06	LORNG_HSSG06_07222022	FA97605-3	7/22/2022	WS	N	25	
	HSSG08	LORNG_HSSG08_07222022	FA97605-4	7/22/2022	WS	N	25	
	HSSO03	LORNG_HSSO03_07222022	FA97605-5	7/22/2022	SE	N	25	
	HSSO06	LORNG_HSSO06_07222022	FA97605-6	7/22/2022	SE	N	25	
	HSSO08	LORNG_HSSO08_07222022	FA97605-7	7/22/2022	SE	N	25	
FA97925	SWI_002	LORNG_SWI_002_SW_08052022	FA97925-1	8/5/2022	WS	N	25	
	SWI_006	LORNG_SWI_006_SW_08052022	FA97925-2	8/5/2022	WS	N	25	

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Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	WetChem
					Analysis Method		M537	LYDKHN
					Fraction		T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount
FA97957	SWI_007	LORNG_SWI_007_SW_08062022	FA97957-1	8/6/2022	WS	N	25	
FA99091	FHSSO01	LORNG_FHSSO01_09192022	FA99091-2	9/19/2022	SO	N	25	
	FHSSO02	LORNG_FHSSO02_09192022	FA99091-3	9/19/2022	SO	N	25	
	FHSSO03	LORNG_FHSSO03_09192022	FA99091-4	9/19/2022	SO	N	25	
	FHSSO04	LORNG_FHSSO04_09192022	FA99091-5	9/19/2022	SO	N	25	
	FHSSO05	LORNG_FHSSO05_09192022	FA99091-6	9/19/2022	SO	N	25	
	FIELDQC	LORNG_EB218_09192022	FA99091-1	9/19/2022	WQ	EB	25	
SP3620	LT-03	LORNG_LT03_SD_07112022_K	SP3620-1	7/11/2022	SE	N		1
	SW/SD11005	LORNG_SD11005_07122022_K	SP3620-2	7/12/2022	SE	N		1
	SW/SD11006	LORNG_SD11006_07122022_K	SP3620-3	7/12/2022	SE	N		1
	SW/SD12007	LORNG_SD12007_07122022_K	SP3620-5	7/12/2022	SE	N		1
	SW/SD12010	LORNG_SD12010_07122022_K	SP3620-6	7/12/2022	SE	N		1
	WLVB_001	LORNG_WLVB_001_SD_07112022_K	SP3620-4	7/11/2022	SE	N		1
SP3919	LS_002	LORNG_LS_002_SD_07202022_K	SP3919-1	7/20/2022	SE	N		1
	NP_001	LORNG_NP_001_SD_07202022_K	SP3919-2	7/20/2022	SE	N		1
	WBGB_001	LORNG_WBGB_001_SD_07212022_K	SP3919-3	7/21/2022	SE	N		1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96676																		FA96725	
Location				AA20SD-01		AA20SD-02				SW/SD18002		SW/SD18004		SW/SD18005		SW/SD11004							
Sample Date				6/18/2022		6/18/2022				6/18/2022		6/19/2022		6/19/2022		6/21/2022							
Sample ID				LORNG_AA20SD01_06182022		LORNG_AA20SD02_06182022		LORNG_AA20SD02_06182022FD		LORNG_SD18002_06182022		LORNG_SD18004_06192022		LORNG_SD18005_06192022		LORNG_SD11004_06212022							
QC Code				N		N		FD		N		N		N		N							
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier						
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.7	U	1.3	U	1.3	U	7.1	U	8.5	UJ	5.3	R	1.3	UJ						
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	1.3	U						
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	0.86	J						
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.3	U	1.3	U	7.1	U	8.5	UJ	5.3	UJ	1.3	U						
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	1.3	U						
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	5.7	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	1.3	U						
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.4	J	1.5	J	1.1	J	1.4	J	5.2	J	5.3	U	20.6							
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	U	1.3	U						
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	U	5.3	U	1.3	U						
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	1.3	U						
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.3	U	1.3	U	1.4	U	8.5	UJ	5.3	UJ	1.3	U						

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96725		FA97084				FA97153	
		Location	SW/SD11008	SW/SD11009	EBGB_SED001	EBGB_SED002	EBGB_SED003	EBGB_SED004	GB_003	
		Sample Date	6/21/2022	6/21/2022	7/6/2022	7/6/2022	7/6/2022	7/6/2022	7/7/2022	
		Sample ID	LORNG_SD11008_06212022	LORNG_SD11009_06212022	LORNG_EBGB_SED001_FP_07062022	LORNG_EBGB_SED002_FP_07062022	LORNG_EBGB_SED003_FP_07062022	LORNG_EBGB_SED004_FP_07062022	LORNG_GB_003_SD_07072022	
		QC Code	N	N	N	N	N	N	N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 UJ	5.7 U	1.4 U	2.2 U	1.4 U	0.65 U	4.9 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	1.1 U	0.99 J	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.4	2.5	6	13.5	1.3 J	6.2	5.7
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.39 J	0.98 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2 U	1.1 U	1.4 U	2.2 U	1.4 U	0.65 U	0.98 U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objective

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97153											
		Location	GB_004		LORNG-LT-10-06A		LT-16		LT-17		WBGB_SED001		WBGB_SED003	
		Sample Date	7/7/2022		7/7/2022		7/7/2022		7/7/2022		7/6/2022		7/6/2022	
		Sample ID	LORNG_GB_004_SD_07072022		LORNG_LT1006A_SD_07072022		LORNG_LT16_SD_07072022	LORNG_LT16_SD_07072022FD	LORNG_LT17_SD_07072022		LORNG_WBGB_SED001_FP_07062022		LORNG_WBGB_SED003_FP_07062022	
		QC Code	N		N		N	FD	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	6.3	UJ	0.68	U	0.81	UJ	0.72	UJ	0.67	U	0.7	UJ	0.67	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.3	U	2		0.81	U	0.72	U	0.67	U	0.53	J	0.67	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3	U	0.68	U	0.81	U	0.72	U	0.67	U	0.7	U	0.67	U

Notes:

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UJ = Analyte not detected and considered estimated

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NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97181											
			Location	LMR_001		LMR_002		LORNG-LT-10-06		LORNG-LT-13A		LORNG-LT-14A		LS_003		LT-13	
			Sample Date	7/8/2022		7/8/2022		7/8/2022		7/8/2022		7/7/2022		7/7/2022		7/8/2022	
			Sample ID	LORNG_LMR_001_SD_07082022		LORNG_LMR_002_SD_07082022		LORNG_LT1006_SD_07082022		LORNG_LT13A_SD_07082022		LORNG_LT14A_SD_07072022		LORNG_LS_003_SD_07072022		LORNG_LT13_SD_07082022	
			QC Code	N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.3	U	1.2	U	5.5		2.9	J	1.3	U	1.3	U	4.1	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3	U	1.2	U	1.9	U	2.3	U	1.3	U	1.3	U	1.7	U

Notes:

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97181																			
			Location	LT-14		LT-15		LT18		LT19		LT2				SD22001							
			Sample Date	7/8/2022		7/8/2022		7/8/2022		7/7/2022		7/8/2022				7/8/2022							
			Sample ID	LORNG_LT14_SD_07082022		LORNG_LT15_SD_07082022		LORNG_LT18_SD_07082022		LORNG_LT19_SD_07072022		LORNG_LT02_SD_07082022		LORNG_LT02_SD_07082022FD		LORNG_SD22001_07082022							
			QC Code	N		N		N		N		N		FD		N							
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier						
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3	U	1.1	UJ	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorononanoic acid (PFNA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3	U	1.1	UJ	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	2.3	J	1.5	J	1.3	U						
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3	U	1.1	U	1.2	U	1.4	U	1.2	U	1.2	U	1.3	U						

Notes:

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97181			FA97218			
		Location	SD22001	SD22002	SD22003	LT-04		SD21002	SW/SD08002
		Sample Date	7/8/2022	7/8/2022	7/8/2022	7/11/2022		7/11/2022	7/11/2022
		Sample ID	LORNG_SD22001_07082022FD	LORNG_SD22002_07082022	LORNG_SD22003_07082022	LORNG_LT04_SD_07112022	LORNG_LT04_SD_07112022FD	LORNG_SD21002_07112022	LORNG_SD08002_07112022
		QC Code	FD	N	N	N	FD	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3 U	17 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.8 J	7.4	2.2 J	2.3 J	3	1.1 U	3.6
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3 U	3.4 U	1.5 U	1.3 U	1.2 U	1.1 U	1.2 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97218						
		Location		SW/SD08002	SW/SD09002	SW/SD11007	SW/SD12011	SW/SD21001	WBGB_002	WBGB_003
		Sample Date		7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
		Sample ID		LORNG_SD08002_07112022FD	LORNG_SD09002_07112022	LORNG_SD11007_07112022	LORNG_SD12011_07112022	LORNG_SD21001_07112022	LORNG_WBGB_002_SD_07112022	LORNG_WBGB_003_SD_07112022
		QC Code		FD	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 UJ	2.4 U	5.1 UJ	1.3 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 J	5.1 U	1.3 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	3.1	1.2 U	2.3 J	89.2	11	5.1 U	1.3 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2 U	1.2 U	1.2 U	5.7 U	2.4 U	5.1 U	1.3 U

Notes:

N = Normal Field Sample; FD = Field Duplicate

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U = Analyte not detected at the associated detection limits

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R = Sample reuslt is considered unusable for project objective

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236						
		Location		BB_001	BB_SED001	BB_SED002	EBGB_001	EBGB_002	EBGB_003	EBGB_005
		Sample Date		7/9/2022	7/9/2022	7/9/2022	7/9/2022	7/10/2022	7/9/2022	7/10/2022
		Sample ID		LORNG_BB_001_SD_07092022	LORNG_BB_SED001_FP_07092022	LORNG_BB_SED002_FP_07092022	LORNG_EBGB_001_SD_07092022	LORNG_EBGB_002_SD_07102022	LORNG_EBGB_003_SD_07092022	LORNG_EBGB_005_SD_07102022
		QC Code		N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.5 U	1.3 U	10 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.5 U	1.3 U	5.5	7.9	8.1	6.4	5.3 J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 UJ
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.5 U	1.3 U	2 U	1.7 U	1.7 U	1.8 U	6.8 U

Notes:

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97236											
		Location	EBGB_006		GB_SED001		GB_SED002		LORNG-LT-10-01		LORNG-LT-10-02			
		Sample Date	7/9/2022		7/9/2022		7/9/2022		7/10/2022		7/10/2022			
		Sample ID	LORNG_EBGB_006_SD_07092022	LORNG_EBGB_006_SD_07092022FD	LORNG_GB_SED001_FP_07092022		LORNG_GB_SED002_FP_07092022		LORNG_LT1001_SD_07102022		LORNG_LT1002_SD_07102022		LORNG_LT1002_SD_07102022FD	
		QC Code	N	FD	N		N		N		N		FD	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	18 U	18 UJ		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorobutanoic acid (PFBA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorodecanoic acid (PFDA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorononanoic acid (PFNA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	3.6 U	3.7 U		3.8		9.9		5.3		1.2 J	1.4 J
		Perfluorooctanoic acid (PFOA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	3.6 U	18 UJ		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	3.6 U	3.7 U		1.5 U		1.3 U		1.5 U		1.6 U	1.5 U

Notes:

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236							
			Location	LORNG-LT-10-05	LS_001	LS_SED001	LS_SED002	LT-05		SW/SD16005	
			Sample Date	7/9/2022	7/10/2022	7/10/2022	7/10/2022	7/10/2022		7/10/2022	
			Sample ID	LORNG_LT1005_SD_07092022	LORNG_LS_001_SD_07102022	LORNG_LS_SED001_FP_07102022	LORNG_LS_SED002_FP_07102022	LORNG_LT05_SD_07102022	LORNG_LT05A_SD_07102022	LORNG_SD16005_07102022	
			QC Code	N	N	N	N	N	N	N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	8.5		2.1	U	3.2	J	3.8		25.4		17		1.2	U
		Perfluorooctanoic acid (PFOA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	3.3	U	2.1	U	1.6	U	1.6	U	1.3	U	2	U	1.2	U

Notes:

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236						
		Location		SW/SD16005	SW/SD16006	SW/SD17006	SW/SD17007	SW/SD21003	WBGB_004	WBGB_005
		Sample Date		7/10/2022	7/10/2022	7/9/2022	7/9/2022	7/10/2022	7/10/2022	7/10/2022
		Sample ID		LORNG_SD16005_07102022FD	LORNG_SD16006_07102022	LORNG_SD17006_07092022	LORNG_SD17007_07092022	LORNG_SD21003_07102022	LORNG_WBGB_004_SD_07102022	LORNG_WBGB_005_SD_07102022
		QC Code		FD	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	6.9 U	21 UJ	2.6 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.4 U	0.75 J	1.3 U	1.5 U	2.9	36.6	17.9
		Perfluorooctanoic acid (PFOA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	21 U	2.6 UJ
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	4.1 U	2.6 U

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Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97236				FA97285		
		Location	WBGB_SED002	WBGB_SED004		WLB_001	LORNG-LT-03	SW/SD11005	SW/SD11006
		Sample Date	7/9/2022	7/9/2022		7/9/2022	7/11/2022	7/12/2022	7/12/2022
		Sample ID	LORNG_WBGB_SED002_FP_07092022	LORNG_WBGB_SED004_FP_07092022	LORNG_WBGB_SED004_FP_07092022_F	LORNG_WLB_001_SD_07092022	LORNG_LT03_SD_07112022	LORNG_SD11005_07122022	LORNG_SD11006_07122022
		QC Code	N	N	FD	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	14.6	5.7	5	1.9 U	0.6 U	0.73 J	2.1
		Perfluorooctanoic acid (PFOA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.8 U	1.6 U	1.7 U	1.9 U	0.6 U	0.58 U	0.67 U

Notes:

N = Normal Field Sample; FD = Field Duplicate

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R = Sample reuslt is considered unusable for project objective

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Date: 11/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97285			FA97560			
		Location	SW/SD12007	SW/SD12010	WLVB_001	HSSO01	LS_002	NP_001	WBGB_001
		Sample Date	7/12/2022	7/12/2022	7/11/2022	7/20/2022	7/20/2022	7/20/2022	7/21/2022
		Sample ID	LORNG_SD12007_07122022	LORNG_SD12010_07122022	LORNG_WLVB_001_SD_07112022	LORNG_HSSO01_07202022	LORNG_LS_002_SD_07202022	LORNG_NP_001_SD_07202022	LORNG_WBGB_001_SD_07212022
		QC Code	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	0.64 U	1.9	3.4 U	1.7 U	9.8 U	1.5 U	86 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	0.64 U	0.6 R	3.4 R	1.7 UJ	9.8 UJ	1.5 U	86 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorobutanoic acid (PFBA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	0.64 U	1.7	3.4 U	1.7 U	2 U	1.5 U	86 U
		Perfluorodecanoic acid (PFDA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	9.8 U	1.5 U	86 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.64 U	1.4	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	0.64 U	1.2	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorononanoic acid (PFNA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	86 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	0.64 U	4.3	3.4 U	1.7 U	2 U	1.5 U	86 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	6.1	82.2	3.4 U	2.2 J	2 U	1.5 U	17 U
		Perfluorooctanoic acid (PFOA)	UG/KG	0.64 U	0.32 J	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	17 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	0.64 U	0.6 U	3.4 U	1.7 U	2 U	1.5 U	86 U

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Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97584				FA97605		
		Location		HSSO02	HSSO04	HSSO05		HSSO03	HSSO06	HSSO08
		Sample Date		7/21/2022	7/21/2022	7/21/2022		7/22/2022	7/22/2022	7/22/2022
		Sample ID		LORNG_HSSO02_07212022	LORNG_HSSO04_07212022	LORNG_HSSO05_07212022	LORNG_HSSO05_07212022FD	LORNG_HSSO03_07222022	LORNG_HSSO06_07222022	LORNG_HSSO08_07222022
		QC Code		N	N	N	FD	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	3.5 U	1.9 U	20 U	18 U	12 U	1.6 U	9.8 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	12 UJ	1.6 U	9.8 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	17 UJ	9.4 U	20 UJ	18 UJ	12 UJ	8.2 U	9.8 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	12 UJ	1.6 U	9.8 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	3.5 U	1.9 U	20 U	18 U	12 U	1.6 U	9.8 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	4.9
		Perfluorohexanoic acid (PFHxA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorononanoic acid (PFNA)	UG/KG	3.5 U	1.9 U	20 U	18 U	2.4 U	1.6 U	9.8 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	3.5 U	1.9 U	20 U	3.6 U	2.4 U	1.6 U	9.8 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	48	0.95 J	25.9	24.4	2.4 U	2.7 J	16.8
		Perfluorooctanoic acid (PFOA)	UG/KG	17 U	1.9 U	20 U	18 U	2.4 U	1.6 U	9.8 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	3.5 U	1.9 U	4 U	3.6 U	2.4 U	1.6 U	2 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA99091											
			Location	FHSSO01		FHSSO02		FHSSO03		FHSSO04		FHSSO05			
			Sample Date	9/19/2022		9/19/2022		9/19/2022		9/19/2022		9/19/2022			
			Sample ID	LORNG_FHSSO01_09192022		LORNG_FHSSO02_09192022		LORNG_FHSSO03_09192022		LORNG_FHSSO04_09192022		LORNG_FHSSO05_09192022			
			QC Code	N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	6.6	UJ	5.6	U	2.4	U	1.1	U	1.1	U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	6.6	U	5.6	U	2.4	U	1.1	U	1.1	U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	6.6	R	5.6	R	2.4	UJ	1.1	U	1.1	U		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	6.6	U	5.6	U	2.4	U	1.1	U	1.1	U		
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorobutanoic acid (PFBA)	UG/KG	6.6	U	5.6	U	2.4	U	1.1	U	1.1	U		
		Perfluorodecane sulfonate (PFDS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorodecanoic acid (PFDA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorododecanoic acid (PFDoA)	UG/KG	6.6	UJ	5.6	UJ	2.4	UJ	1.1	U	1.1	U		
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluoroheptanoic acid (PFHpA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	6.6	UJ	5.6	UJ	3.3	J	1.1	U	1.1	U		
		Perfluorohexanoic acid (PFHxA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorononanesulfonic acid (PFNS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorononanoic acid (PFNA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	6.6	UJ	5.6	UJ	9.3		4.6		1.1	U		
		Perfluorooctanoic acid (PFOA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluoropentanoic acid (PFPeA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	6.6	U	5.6	U	2.4	U	1.1	U	1.1	U		
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	6.6	UJ	5.6	UJ	2.4	UJ	1.1	U	1.1	U		
		Perfluoroundecanoic acid (PFUnA)	UG/KG	6.6	UJ	5.6	UJ	2.4	U	1.1	U	1.1	U		

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Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96676					FA96725		
		Location	AA20SD-01	AA20SD-02	SW/SD18002	SW/SD18004	SW/SD18005	SW/SD11004	SW/SD11008	SW/SD11009
		Sample Date	6/18/2022	6/18/2022	6/18/2022	6/19/2022	6/19/2022	6/21/2022	6/21/2022	6/21/2022
		Sample ID	LORNG_AA20SW01_06182022	LORNG_AA20SW02_06182022	LORNG_SW18002_06182022	LORNG_SW18004_06192022	LORNG_SW18005_06192022	LORNG_SW11004_06212022	LORNG_SW11008_06212022	LORNG_SW11009_06212022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.4 U	3.4 U	3.4 U	3.4 UJ	3.4 U	3.4 U	3.4 U	3.4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	1.8 J	3.4 U	3.4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	4 J	3.4 U	3.4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.4 R	3.4 R	3.4 R	3.4 R	3.4 R	18 R	17 R	3.4 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 J	1.6 J	1.2 J	1.8 J	1.7 U	1.7 U	2.6 J	2.8 J
		Perfluorobutanoic acid (PFBA)	NG/L	3.4 J	2.9 J	4.1 J	9.8	5 J	2.2 J	4.5 J	4.2 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.7 U	1.2 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.8 UJ	1.7 U	1.7 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.1 J	2 J	1.3 J	1.7 U	1.7 U	1.1 J	2.1 J	2 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3 J	0.94 J	1.2 J	6.4	1.7 J	2.6 J	4.1	4.2
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	34.5	29	20.2	23.1	4.5	8.1	29.8	31
		Perfluorohexanoic acid (PFHxA)	NG/L	2.2 J	1.9 J	1.8 J	6.6 J	1.6 J	2.7 J	5.7	5.8
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.7 U	5.6	1.7 U	1.7 U	1.7 U	1.7 J	1.7 U	1.7 U
		Perfluorononanoic acid (PFNA)	NG/L	1.7 U	1 J	1.7 U	1.4 J	1.7 U	1.3 J	1.2 J	0.92 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.7 UJ	1.7 R	1.7 R	1.7 R	1.7 R	9.1 UJ	8.6 R	1.7 R
		Perfluorooctanesulfonic acid (PFOS)	NG/L	106	481	64	21	4.1	170	142	125
		Perfluorooctanoic acid (PFOA)	NG/L	1.6 J	1.5 J	1.6 J	8.1	1.8 J	5.7	6	5.5
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3 J	2.6 J	1.5 J	2.4 J	1.7 U	1.7 U	3.2 J	3.8

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date:12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96676					FA96725		
			Location	AA20SD-01	AA20SD-02	SW/SD18002	SW/SD18004	SW/SD18005	SW/SD11004	SW/SD11008	SW/SD11009
			Sample Date	6/18/2022	6/18/2022	6/18/2022	6/19/2022	6/19/2022	6/21/2022	6/21/2022	6/21/2022
			Sample ID	LORNG_AA20SW01_06182022	LORNG_AA20SW02_06182022	LORNG_SW18002_06182022	LORNG_SW18004_06192022	LORNG_SW18005_06192022	LORNG_SW11004_06212022	LORNG_SW11008_06212022	LORNG_SW11009_06212022
			QC Code	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	2.3 J	2 J	2.2 J	12.1 J	4.6 J	2.2 J	6.7	6.6
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.7 UJ	1.7 UJ	1.7 R	1.7 UJ	1.7 UJ	1.8 UJ	8.6 UJ	1.7 R
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.7 UJ	1.7 UJ	1.7 R	1.7 UJ	1.7 UJ	1.8 UJ	1.7 U	1.7 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.7 U	1.4 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97153							
		Location		AA19SW-02	AA19SW-03	FIELDQC	GB_003	GB_004	LORNG-LT-10-06A	LT-16	
		Sample Date		7/7/2022	7/7/2022	7/6/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	
		Sample ID		LORNG_AA19SW02_07072022	LORNG_AA19SW03_07072022	LORNG_EB200_07062022	LORNG_GB_003_SW_07072022	LORNG_GB_004_SW_07072022	LORNG_LT1006A_SW_07072022	LORNG_LT16_SW_07072022	LORNG_LT16_SW_07072022FD
		QC Code		N	N	EB	N	N	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	18 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	18 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 R	18 R	3.6 U	20 UJ	3.6 R	18 R	3.6 R	3.6 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 J	1.8 U	1.8 U	1.4 J	1.8 U	1.6 J	1.8 U	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	4.8 J	3.9 J	3.6 U	3.7 J	3.6 U	4.2 J	2.3 J	2.4 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	8.9 UJ	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	8.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	8.9 UJ	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.1 J	1.8 U	1.8 U	2 U	1.8 U	1.1 J	1.8 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.8 J	3 J	1.8 U	4.4	1.8 U	4.9	1.2 J	1 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	77.7	33.3	1.8 U	24.3	1.8 U	26.9	1.8 U	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	9.4	4.9	1.8 U	6.3	1.8 U	7.8	1.8 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	8.9 UJ	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	1.2 J	1.3 J	1.8 U	1 J	1.8 U	1.1 J	1.8 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 UJ	8.9 UJ	1.8 U	1.3 J	1.8 U	8.9 U	1.8 UJ	1.8 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	67.7	23.6 J	1.8 U	49.1	1.8 U	60.8	1.8 U	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	9	3.8	1.8 U	6.6	1.8 U	7.1	1.8 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 J	1.8 U	1.8 U	1.6 J	1.8 U	2 J	1.8 U	1.8 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97153													
			Location	AA19SW-02		AA19SW-03		FIELDQC		GB_003		GB_004		LORNG-LT-10-06A		LT-16	
			Sample Date	7/7/2022		7/7/2022		7/6/2022		7/7/2022		7/7/2022		7/7/2022		7/7/2022	
			Sample ID	LORNG_AA19SW02_07072022		LORNG_AA19SW03_07072022		LORNG_EB200_07062022		LORNG_GB_003_SW_07072022		LORNG_GB_004_SW_07072022		LORNG_LT1006A_SW_07072022		LORNG_LT16_SW_07072022	LORNG_LT16_SW_07072022FD
			QC Code	N		N		EB		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	6.1		4.2		1.8	U	9.3		1.8	U	10.7		4.5		1.7	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	UJ	8.9	R	1.8	U	2	U	1.8	U	1.8	U	1.8	R	1.8	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	8.9	UJ	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	8.9	UJ	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = nanograms per liter
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97153	
			Location	LT-17	
			Sample Date	7/7/2022	
			Sample ID	LORNG_LT17_SW_07072022	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.6	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	8.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97153	
			Location	LT-17	
			Sample Date	7/7/2022	
			Sample ID	LORNG_LT17_SW_07072022	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U

Notes:
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J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97181													
		Location		FIELDQC				LMR_001		LMR_002		LORNG-LT-10-06		LORNG-LT-13A		LORNG-LT-14A	
		Sample Date		7/7/2022				7/8/2022		7/8/2022		7/8/2022		7/8/2022		7/7/2022	
		Sample ID		LORNG_EB201_07072022		LORNG_EB202_07072022		LORNG_LMR_001_SW_07082022		LORNG_LMR_002_SW_07082022		LORNG_LT1006_SW_07082022		LORNG_LT13A_SW_07082022		LORNG_LT14A_SW_07072022	
		QC Code		EB		EB		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U	3.8	U	4	UJ	3.7	U	4	U	4	U	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7	U	3.8	U	4	U	3.7	U	4	U	4	U	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U	3.8	U	4	U	3.7	U	4	U	4	U	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U	3.8	U	4	UJ	3.7	U	4	U	4	U	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7	U	3.8	U	20	R	3.7	R	4	R	4	R	3.7	R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U	3.8	U	4	U	3.7	U	4	U	4	U	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	1.9	J	2	U	1.9	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.8	U	4	UJ	3.7	UJ	5	J	3.2	J	3.7	UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	2	U	2	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	2	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	2	U	2	U	1.9	UJ
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.4	J	2	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	2	UJ	1.1	J	5		2	J	1.4	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	2	U	1.3	J	28.6		16.1		9.2	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	7.4		3.8	J	2.3	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	2	U	2	U	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	2	U	2	U	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	UJ	2	UJ	2	UJ	1.9	UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	2	U	3.1	J	58.9		17.8		12.8	
		Perfluorooctanoic acid (PFOA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	7.3		3.9	J	2.2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	2.4	J	2	U	1.9	U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97181															
			Location	FIELDQC				LMR_001		LMR_002		LORNG-LT-10-06		LORNG-LT-13A		LORNG-LT-14A	
			Sample Date	7/7/2022				7/8/2022		7/8/2022		7/8/2022		7/8/2022		7/7/2022	
			Sample ID	LORNG_EB201_07072022		LORNG_EB202_07072022		LORNG_LMR_001_SW_07082022		LORNG_LMR_002_SW_07082022		LORNG_LT1006_SW_07082022		LORNG_LT13A_SW_07082022		LORNG_LT14A_SW_07072022	
			QC Code	EB		EB		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	2	UJ	2.6	J	9.2		3.7	J	3.4	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	UJ	2	UJ	2	UJ	2	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	2	U	2	U	1.9	UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2	UJ	1.9	U	2	U	2	U	1.9	UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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R = Sample reuslt is considered unusable for project objectives
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97181							
		Location		LS_003	LT-13	LT-14	LT-15	LT18	LT19	LT2	
		Sample Date		7/7/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/7/2022	7/8/2022	
		Sample ID		LORNG_LS_003_SW_07072022	LORNG_LT13_SW_07082022	LORNG_LT14_SW_07082022	LORNG_LT15_SW_07082022	LORNG_LT18_SW_07082022	LORNG_LT19_SW_07072022	LORNG_LT02_SW_07082022	LORNG_LT02_SW_07082022FD
		QC Code		N	N	N	N	N	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.8 U	4 U	4 U	4 U	4 U	3.8 UJ	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.8 U	4 U	4 U	4 U	4 U	3.8 UJ	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.8 U	4 U	4 U	4 U	4 U	3.8 UJ	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.8 U	4 U	4 U	4 U	4 U	3.8 UJ	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.8 R	4 R	4 R	4 R	4 R	3.8 R	20 R	4 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.8 U	4 U	4 U	4 U	4 U	3.8 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	2 U	1.9 J	2 U	1.3 J	1.9 UJ	1.4 J	1.4 J
		Perfluorobutanoic acid (PFBA)	NG/L	3.8 UJ	3.3 J	3.1 J	4 J	2.7 J	3.8 UJ	3.5 J	4.4 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.9 UJ	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.9 UJ	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	2 UJ	2 U	2 U	2 UJ	1.9 UJ	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.9 UJ	2 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	2.1 J	1.6 J	1.3 J	1.4 J	1.6 J	4	3.7 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.1	17.9	11.8	6.8	11.7	10.9 J	20.1	21.6
		Perfluorohexanoic acid (PFHxA)	NG/L	1.1 J	3.7 J	2.9 J	2.5 J	3 J	2.9 J	5.1	5.8
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.9 UJ	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	2 U	1.1 J	2 U	2 U	1.9 U	2 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 UJ	2 UJ	2 U	2 UJ	2 U	1.9 UJ	2 U	2 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 J	20.8	53.3	17.5	12.6	13.4 J	39.3	42.4
		Perfluorooctanoic acid (PFOA)	NG/L	1 J	4.4	3.6 J	2.2 J	3.1 J	2.7 J	4.8	5.7
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.9 UJ	1.5 J	2 J

Prepared by: AKN
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97181									
		Location		LS_003	LT-13	LT-14	LT-15	LT18	LT19	LT2			
		Sample Date		7/7/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/7/2022	7/8/2022			
		Sample ID		LORNG_LS_003_SW_07072022	LORNG_LT13_SW_07082022	LORNG_LT14_SW_07082022	LORNG_LT15_SW_07082022	LORNG_LT18_SW_07082022	LORNG_LT19_SW_07072022	LORNG_LT02_SW_07082022		LORNG_LT02_SW_07082022FD	
		QC Code		N	N	N	N	N	N	N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.7	J	4.4		5.8		4.4		4.6		4.4	J	8.4		7.8	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	UJ	2	UJ	2	UJ	2	UJ	2	UJ	1.9	UJ	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	UJ	2	U	2	U	2	UJ	1.9	UJ	2	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	2	U	2	U	2	U	1.9	UJ	2	U	2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA97181					FA97218		
		Location	SW19004	SW22001		SW22002	SW22003	FIELDQC	LT-04	
		Sample Date	7/7/2022	7/8/2022		7/8/2022	7/8/2022	7/11/2022	7/11/2022	
		Sample ID	LORNG_SW19004_07072022	LORNG_SW22001_07082022	LORNG_SW22001_07082022FD	LORNG_SW22002_07082022	LORNG_SW22003_07082022	LORNG_EB212_07112022	LORNG_LT04_SW_07112022	LORNG_LT04_SW_07112022FD
		QC Code	N	N	FD	N	N	EB	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.4 U	3.8 U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.4 U	3.8 U	2.2 J	2.1 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	4 U	4 U	4.4 U	3.8 U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	4 U	4.4 U	3.8 U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 R	20 UJ	4 R	4 UJ	4.4 R	3.8 U	20 R	20 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	4 U	4.4 U	3.8 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 J	1.8 J	2.1 J	1.9 J	1.9 U	5.1	4.9
		Perfluorobutanoic acid (PFBA)	NG/L	2.9 J	4.8 J	4.6 J	6.3 J	5.3 J	3.8 U	6.1 J	5.9 J
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	2 U	2 U	2.2 UJ	1.9 U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	2 U	2 U	1.2 J	1.9 U	4.5	4.2
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.2 J	5.2	4.8	4.8	4.6	1.9 U	8.7	8.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	9.9	29.9	28.8	31.2	29.2	1.9 U	63.1	59.1
		Perfluorohexanoic acid (PFHxA)	NG/L	2 J	7.6	8.1	7.5	7.6	1.9 U	14.4	13.9
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	1 J	2 U	1.1 J	2.2 U	1.9 U	1.5 J	1.5 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	1.2 J	2 UJ	2 U	2.2 U	1.9 U	2 U	10 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	5.2	63.8	60	64.7	65.5	1.9 U	218	230
		Perfluorooctanoic acid (PFOA)	NG/L	3.1 J	7	6.7	7.7	7.3	1.9 U	10.9	10.1
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2.3 J	2.1 J	2 J	2.2 J	1.9 U	7.1	6.3

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97181					FA97218		
		Location		SW19004	SW22001		SW22002	SW22003	FIELDQC	LT-04	
		Sample Date		7/7/2022	7/8/2022		7/8/2022	7/8/2022	7/11/2022	7/11/2022	
		Sample ID		LORNG_SW19004_07072022	LORNG_SW22001_07082022	LORNG_SW22001_07082022FD	LORNG_SW22002_07082022	LORNG_SW22003_07082022	LORNG_EB212_07112022	LORNG_LT04_SW_07112022	LORNG_LT04_SW_07112022FD
		QC Code		N	N	FD	N	N	EB	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	2.5 J	10.5	11.1	9.8	9.5	1.9 U	17.4	17.7
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 UJ	2 U	2 U	2 UJ	2.2 UJ	1.9 U	10 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	2 U	2 U	2.2 UJ	1.9 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2 U	2 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97218									
		Location		SW/SD08002		SW/SD09002	SW/SD11007	SW/SD12011	SW/SD21001	WBGB_002	WBGB_003		
		Sample Date		7/11/2022		7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022		
		Sample ID		LORNG_SW08002_07112022	LORNG_SW08002_07112022FD	LORNG_SW09002_07112022	LORNG_SW11007_07112022	LORNG_SW12011_07112022	LORNG_SW21001_07112022	LORNG_WBGB_002_SW_07112022	LORNG_WBGB_003_SW_07112022		
		QC Code		N	FD	N	N	N	N	N	N		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U	4 U	4 U	3.6 U	4 U	4 U	3.5 U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	11.1	11.2	8.4	3.9 J	7.4	8.7	4 U	3.5 U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2.1 J	2.4 J	4 U	4 U	3.6 U	4 U	4 U	3.5 U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	4 U	4 U	3.6 U	4 U	4 U	3.5 U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 R	3.6 R	20 R	20 R	18 R	20 R	4 R	3.5 R		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	4 U	4 U	3.6 U	4 U	4 U	3.5 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.5 J	2.5 J	4.9	4	3.5 J	5.6	2 U	1.8 U		
		Perfluorobutanoic acid (PFBA)	NG/L	5.3 J	5.5 J	9	5.6 J	18 U	11.4 J	4 U	2.1 J		
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	2 U	2 U	1.8 U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	2 U	2 U	1.8 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	10 U	2 U	1.8 U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7 J	1.7 J	3.1 J	3.3 J	3.3 J	4	2 U	1.8 U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	8.8	8.9	11.7	7.3	6	13	1.8 J	2.2 J		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	51.1	49.9	93.9	47.4	36.7	88.3	7.1	7		
		Perfluorohexanoic acid (PFHxA)	NG/L	13.2	13.3	24.1	11.5	10.9	23.8	2 U	1.2 J		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	2 U	2 U	1.8 U		
		Perfluorononanoic acid (PFNA)	NG/L	1.3 J	1.3 J	1.8 J	1.3 J	1.2 J	2.5 J	2 U	1.8 U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 J	2.1 J	10 U	10 U	8.9 U	3.6 J	2 UJ	1.8 UJ		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	63.8	71.5	115	202	206	161	3.7 J	3.6		
		Perfluorooctanoic acid (PFOA)	NG/L	12.2	12.4	23.2	8.2	7	26	1.1 J	1.4 J		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	3.4 J	6.1	4.9	4.5	6.7	2 U	1.8 U		

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97218															
			Location	SW/SD08002		SW/SD09002		SW/SD11007		SW/SD12011		SW/SD21001		WBGB_002		WBGB_003	
			Sample Date	7/11/2022		7/11/2022		7/11/2022		7/11/2022		7/11/2022		7/11/2022		7/11/2022	
			Sample ID	LORNG_SW08002_07112022		LORNG_SW08002_07112022FD		LORNG_SW09002_07112022		LORNG_SW11007_07112022		LORNG_SW12011_07112022		LORNG_SW21001_07112022		LORNG_WBGB_002_SW_07112022		LORNG_WBGB_003_SW_07112022	
			QC Code	N		FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	15.1		15.3		23.9		18.8		10.8		25		2	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	2	U	2	U	1.8	U	2	UJ	2	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	2	U	2	U	1.8	U	10	U	2	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	2	U	2	U	1.8	U	2	U	2	U	1.8	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236									
		Location		BB_001	EBGB_001		EBGB_002		EBGB_003		EBGB_005	EBGB_006	
		Sample Date		7/9/2022	7/9/2022		7/10/2022		7/9/2022		7/10/2022	7/9/2022	
		Sample ID		LORNG_BB_001_SW_07092022	LORNG_EBGB_001_SW_07092022		LORNG_EBGB_002_SW_07102022		LORNG_EBGB_003_SW_07092022		LORNG_EBGB_005_SW_07102022	LORNG_EBGB_006_SW_07092022	LORNG_EBGB_006_SW_07092022FD
		QC Code		N	N		N		N		N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.6 U		18 U		3.6 U		20 U	3.6 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	2.7 J		3.6 U		3.6 U		4 U	3.6 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.6 U		3.6 U		3.6 U		4 U	3.6 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U		3.6 U		3.6 U		20 U	3.6 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 R	3.6 R		18 R		3.6 R		20 R	3.6 R	4 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U		3.6 U		3.6 U		4 U	3.6 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	3 J		8.9 U		2.7 J		10 U	1.8 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.2 J	6.4 J		11.2 J		6.9 J		5.2 J	3.6 UJ	4 UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.8 U		1.8 U		1.8 U		2 U	1.8 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U		1.8 U		1.8 U		2 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U		8.9 UJ		1.8 U		10 UJ	1.8 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 J		1.1 J		1.6 J		2 U	1.8 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 J	8.8		5.4		8.9		2.2 J	1.8 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	65.1		41.8		55.5		1.5 J	1.8 U	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	15.5		8.8 J		15.3		10 U	1.8 U	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U		1.8 U		1.8 U		2 U	1.8 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.6 J		1.3 J		1.6 J		2 U	1.8 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 UJ	1.7 J		8.9 UJ		1.2 J		10 R	1.8 R	2 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	75		53.9		76.4		6.7	1.8 U	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	0.96 J	14.8		7.3		13.6		1.8 J	0.9 J	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	4.2		8.9 U		3.5 J		10 U	1.8 U	2 U

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Data Validation and Usability Report
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June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236												
			Location	BB_001		EBGB_001		EBGB_002		EBGB_003		EBGB_005		EBGB_006		
			Sample Date	7/9/2022		7/9/2022		7/10/2022		7/9/2022		7/10/2022		7/9/2022		
			Sample ID	LORNG_BB_001_SW_07092022		LORNG_EBGB_001_SW_07092022		LORNG_EBGB_002_SW_07102022		LORNG_EBGB_003_SW_07092022		LORNG_EBGB_005_SW_07102022		LORNG_EBGB_006_SW_07092022		LORNG_EBGB_006_SW_07092022FD	
			QC Code	N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	16.9		7.4	J	19.5		5.7	J	1.8	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	8.9	R	1.8	U	10	R	1.8	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	8.9	UJ	1.8	U	10	UJ	1.8	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	2	U	1.8	U	2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date:12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236								
		Location		FIELDQC								
		Sample Date		7/8/2022		7/9/2022			7/10/2022			
		Sample ID		LORNG_EB203_07082022	LORNG_EB204_07082022	LORNG_EB205_07092022	LORNG_EB206_07092022	LORNG_EB207_07092022	LORNG_EB208_07102022	LORNG_EB209_07102022	LORNG_EB210_07102022	
		QC Code		EB	EB	EB	EB	EB	EB	EB	EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	18 U	18 U	20 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	3.8 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	10 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	1.9 U	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236															
			Location	FIELDQC															
			Sample Date	7/8/2022				7/9/2022						7/10/2022					
			Sample ID	LORNG_EB203_07082022		LORNG_EB204_07082022		LORNG_EB205_07092022		LORNG_EB206_07092022		LORNG_EB207_07092022		LORNG_EB208_07102022		LORNG_EB209_07102022		LORNG_EB210_07102022	
			QC Code	EB		EB		EB		EB		EB		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.8	U	2	U	1.8	U	8.9	U	1.8	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	10	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236							
		Location		FIELDQC	LORNG-LT-10-01	LORNG-LT-10-02		LORNG-LT-10-05	LS_001	LT-05	
		Sample Date		7/10/2022	7/10/2022	7/10/2022		7/9/2022	7/10/2022	7/10/2022	
		Sample ID		LORNG_EB211_07102022	LORNG_LT1001_SW_07102022	LORNG_LT1002_SW_07102022	LORNG_LT1002_SW_07102022FD	LORNG_LT1005_SW_07092022	LORNG_LS_001_SW_07102022	LORNG_LT05_SW_07102022	LORNG_LT05A_SW_07102022
		QC Code		EB	N	N	FD	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	3.6 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	4 U	8.3	9.2	3.6 U	4 U	3.6 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	4 U	3.6 U	1.8 J	3.6 U	4 U	3.6 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	20 U	3.6 U	3.6 U	3.6 U	4 U	18 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	18 U	20 R	18 R	18 R	3.6 R	20 R	18 R	20 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	4 U	3.6 U	3.6 U	3.6 U	4 U	3.6 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	3.3 J	5.5	4.5	2.7 J	2 U	2.1 J	2.8 J
		Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	20 U	12.4 J	13.7 J	7 J	4 U	18 U	20 UJ
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	10 U	8.9 U	8.9 U	1.8 U	2 U	8.9 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	10 UJ	8.9 UJ	8.9 UJ	1.8 U	2 U	8.9 UJ	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 J	3 J	3.6	1.7 J	2 U	1.6 J	1.6 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	8.7	13	13.4	8.9	2 U	3.7	4.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	55.9	91.3	96.8	57	2.8 J	24.1	27.5
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	15.5	24.1	25	15.5	2 U	5.8	6.8
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	2 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.8 J	2.2 J	2.8 J	1.7 J	2 U	1 J	1.1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	10 U	1.8 U	8.9 UJ	1.5 J	10 UJ	8.9 UJ	10 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	82.2	132 J	200 J	76.4	2.1 J	94	125
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	14.6	24.8	26.9	14.5	2 U	5.2	5.4
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	4	6.6	7.1	3.4 J	2 U	2.8 J	3.5 J

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date:12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236															
			Location	FIELDQC		LORNG-LT-10-01		LORNG-LT-10-02				LORNG-LT-10-05		LS_001		LT-05			
			Sample Date	7/10/2022		7/10/2022		7/10/2022				7/9/2022		7/10/2022		7/10/2022			
			Sample ID	LORNG_EB211_07102022		LORNG_LT1001_SW_07102022		LORNG_LT1002_SW_07102022		LORNG_LT1002_SW_07102022FD		LORNG_LT1005_SW_07092022		LORNG_LS_001_SW_07102022		LORNG_LT05_SW_07102022		LORNG_LT05A_SW_07102022	
			QC Code	EB		N		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	17.1		25.3		26		18.3		1.4	J	5.8	J	6.3	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	10	UJ	8.9	UJ	8.9	UJ	1.8	U	10	R	8.9	UJ	10	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	10	UJ	8.9	UJ	8.9	UJ	1.8	U	2	U	8.9	UJ	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	10	U	8.9	U	8.9	U	1.8	U	2	U	8.9	U	2	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236									
		Location		SW/SD16005		SW/SD16006	SW/SD17006	SW/SD17007	SW/SD21003	SW05001	SW21004		
		Sample Date		7/10/2022		7/10/2022	7/9/2022	7/9/2022	7/10/2022	7/10/2022	7/10/2022		
		Sample ID		LORNG_SW16005_07102022	LORNG_SW16005_07102022FD	LORNG_SW16006_07102022	LORNG_SW17006_07092022	LORNG_SW17007_07092022	LORNG_SW21003_07102022	LORNG_SW05001_07102022	LORNG_SW21004_07102022		
		QC Code		N	FD	N	N	N	N	N	N		
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	20 U	20 U	20 U	3.6 U	3.6 U	3.6 U	4 U	3.6 U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	4 U	3.6 U	3.6 U	10.1	49.1	4.8 J		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	4 U	3.6 U	3.6 U	3.6 U	28.6	3.6 U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	4 U	3.6 U	3.6 U	18 UJ	4 U	3.6 U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20 R	20 R	20 R	3.6 R	18 R	18 R	80 R	3.6 R		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	4 U	3.6 U	3.6 U	3.6 U	4 U	3.6 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	10 U	10 U	10 U	1.8 U	8.9 U	5.3	31.6	4.3		
		Perfluorobutanoic acid (PFBA)	NG/L	18 J	19.4 J	16.6 J	3.9 J	14.5 J	14 J	74	8.5		
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	10 U	1.8 U	1.8 U	8.9 U	2 U	1.8 U		
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U	9	1.8 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	10 UJ	2 U	10 UJ	1.8 U	8.9 U	8.9 UJ	40 U	1.8 U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	2 U	1.8 U	1.8 U	3.9	39.2	2.8 J		
		Perfluoroheptanoic acid (PFHpA)	NG/L	6	5.9	5.9 J	3.2 J	3.4 J	14	183	10.3		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	29.2	29.8	30	11	7.8	97.2	701	73.8		
		Perfluorohexanoic acid (PFHxA)	NG/L	6.4 J	8.5 J	9.4 J	3.4 J	3.6	26	156	18.5		
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	10 U	1.8 U	1.8 U	1.8 U	40 U	1.8 U		
		Perfluorononanoic acid (PFNA)	NG/L	2.1 J	1.9 J	2 J	1.8 U	1.4 J	2.4 J	55.7	1.9 J		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	10 R	10 UJ	10 UJ	1.8 U	8.9 U	8.9 UJ	58.8 J	2.8 J		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	23.5	23.9	26.9	15.7	9.1	161	4390	119		
		Perfluorooctanoic acid (PFOA)	NG/L	7.9	8	8.1	2.4 J	3.6	26.9	176	20		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	10 U	10 U	10 U	1.8 U	8.9 U	7.4	60.6	5.1		

Prepared by: AKN
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236															
			Location	SW/SD16005		SW/SD16006		SW/SD17006		SW/SD17007		SW/SD21003		SW05001		SW21004			
			Sample Date	7/10/2022		7/10/2022		7/9/2022		7/9/2022		7/10/2022		7/10/2022		7/10/2022			
			Sample ID	LORNG_SW16005_07102022		LORNG_SW16005_07102022FD		LORNG_SW16006_07102022		LORNG_SW17006_07092022		LORNG_SW17007_07092022		LORNG_SW21003_07102022		LORNG_SW05001_07102022		LORNG_SW21004_07102022	
			QC Code	N		FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	8.6	J	9.6	J	8.5	J	5.2		8.9	U	27.6		211		20.9	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	10	R	10	UJ	10	UJ	1.8	U	8.9	UJ	8.9	R	40	UJ	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	10	UJ	2	U	10	UJ	1.8	U	8.9	U	8.9	UJ	40	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	10	U	1.8	U	1.8	U	8.9	UJ	3.4	J	1.8	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
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NG/L = nanograms per liter
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97236			FA97285				
		Location		WBGB_004	WBGB_005	WLB_001	FIELDQC	LORNG-LT-03	SW/SD11005	SW/SD11006	SW/SD12007
		Sample Date		7/10/2022	7/10/2022	7/9/2022	7/11/2022	7/11/2022	7/12/2022	7/12/2022	7/12/2022
		Sample ID		LORNG_WBGB_004_SW_07102022	LORNG_WBGB_005_SW_07102022	LORNG_WLB_001_SW_07092022	LORNG_EB213_07112022	LORNG_LT03_SW_07112022	LORNG_SW11005_07122022	LORNG_SW11006_07122022	LORNG_SW12007_07122022
		QC Code		N	N	N	EB	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	3.6 U	3.6 U	4 U	4 U	4 U	4 U	6.3 J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	3.6 U	3.6 U	4 U	4 U	4 U	4 U	224
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	3.6 U	3.6 U	4 U	4 U	4 U	4 U	109
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	18 U	3.6 U	4 U	4 U	4 U	4 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 UJ	18 R	3.6 R	4 U	20 R	20 R	4 R	89 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	3.6 U	3.6 U	4 U	4 U	4 U	4 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.2 J	4.2	1.8 U	2 U	2 U	1.9 J	15.9	33.7
		Perfluorobutanoic acid (PFBA)	NG/L	4.1 J	7.4 J	2.8 J	4 U	2.3 J	6.9 J	7.9 J	32.1
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	8.9 U	1.8 U	2 U	2 U	2 U	2 U	8.6
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	3.2 J
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	8.9 UJ	1.8 U	2 U	2 U	2 U	2 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.3 J	3.6	1.8 U	2 U	2 U	2.6 J	4.6	76.8
		Perfluoroheptanoic acid (PFHpA)	NG/L	5	6	1.4 J	2 U	2 U	9.9	10	50
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	36.3	42.1	1.8 U	2 U	5.2	35.2	96.7	398
		Perfluorohexanoic acid (PFHxA)	NG/L	9.1	10.7	1.8 U	2 U	2 U	10.3	21.8	142
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	8.9 U	1.8 U	2 U	2 U	2 U	2 U	30.8
		Perfluorononanoic acid (PFNA)	NG/L	2 U	1.3 J	1.8 U	2 U	2 U	3.4 J	1.4 J	6.6
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	8.9 UJ	1.8 U	2 U	2 U	2 U	2 U	33.2
		Perfluorooctanesulfonic acid (PFOS)	NG/L	126	187	1.8 U	2 U	3.7 J	191	128	5590
		Perfluorooctanoic acid (PFOA)	NG/L	6.6	8	1.8 U	2 U	1.1 J	16.8	13	89.4
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1	5.6	1.8 U	2 U	2 U	3.1 J	18.4	50.8

Prepared by: AKN
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Checked by: ALJ
Date:12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97236						FA97285										
			Location	WBGB_004		WBGB_005		WLB_001		FIELDQC		LORNG-LT-03		SW/SD11005		SW/SD11006		SW/SD12007		
			Sample Date	7/10/2022		7/10/2022		7/9/2022		7/11/2022		7/11/2022		7/12/2022		7/12/2022		7/12/2022		
			Sample ID	LORNG_WBGB_004_SW_07102022		LORNG_WBGB_005_SW_07102022		LORNG_WLB_001_SW_07092022		LORNG_EB213_07112022		LORNG_LT03_SW_07112022		LORNG_SW11005_07122022		LORNG_SW11006_07122022		LORNG_SW12007_07122022		
			QC Code	N		N		N		EB		N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
		Perfluoropentanoic acid (PFPeA)	NG/L	10.8		10.4		1.8	U	2	U	2	U	18.2		16.2		97.8		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	8.9	UJ	1.8	U	2	U	10	UJ	10	U	2	U	45	UJ	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	8.9	UJ	1.8	U	2	U	2	UJ	2	U	2	U	1.8	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	8.9	UJ	1.8	U	2	U	2	U	2	U	2	U	1.8	U	

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97285				FA97298	FA97560		
		Location		SW/SD12009		SW/SD12010	WLVB_001	FIELDQC	FIELDQC	HSSG01	LS_002
		Sample Date		7/12/2022		7/12/2022	7/11/2022	7/12/2022	7/20/2022	7/20/2022	7/20/2022
		Sample ID		LORNG_SW12009_07122022	LORNG_SW12009_07122022FD	LORNG_SW12010_07122022	LORNG_WLVB_001_SW_07112022	LORNG_EB214_07122022	LORNG_EB215_07202022	LORNG_HSSG01_07202022	LORNG_LS_002_SW_07202022
		QC Code		N	FD	N	N	EB	EB	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	5.5 J	5.2 J	3.3 J	3.6 U	3.6 U	3.6 U	3.6 U	4.4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	199	197	153	3.6 U	3.6 U	3.6 U	3.6 U	4.4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	64.8	60.9	32.6	3.6 U	3.6 U	3.6 U	3.6 U	4.4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U	4.4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	71 U	71 UJ	80 R	18 R	18 U	3.6 U	3.6 R	4.4 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	3.6 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U	4.4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	32.3	32.2	38	1.8 U	1.8 U	1.8 U	2.1 J	2.2 U
		Perfluorobutanoic acid (PFBA)	NG/L	32.5	32.5	35.4	3.6 U	3.6 U	3.6 U	7.2 J	5.3 J
		Perfluorodecane sulfonate (PFDS)	NG/L	34.6	38.9	2 U	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2.5 J	2.3 J	2.1 J	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.99 J	1.8 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	59.7	55.7	52.9	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	54.1	53.5	64.4	1.8 U	1.8 U	1.8 U	2.7 J	1.8 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	418	399	437	1.8 U	1.8 U	1.8 U	7.7	2.2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	146	142	148	1.8 U	1.8 U	1.8 U	1.8 U	3.1 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	24.5	18.7	13.2	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U
		Perfluorononanoic acid (PFNA)	NG/L	5.9	5.8	9.1	1.8 U	1.8 U	1.8 U	0.96 J	2.2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	36.2	37.5	26.2	1.8 U	1.8 U	1.8 U	1.8 UJ	2.2 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4010	3770	3610	1.8 U	1.8 U	1.8 U	9.6	1.1 J
		Perfluorooctanoic acid (PFOA)	NG/L	83.9	83.7	89.2	1.8 U	1.8 U	1.8 U	4.9	1.5 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	51.1	49.5	53.2	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97285						FA97298		FA97560			
		Location		SW/SD12009			SW/SD12010		WLVB_001	FIELDQC		FIELDQC		HSSG01	LS_002
		Sample Date		7/12/2022			7/12/2022		7/11/2022	7/12/2022		7/20/2022		7/20/2022	7/20/2022
		Sample ID		LORNG_SW12009_07122022		LORNG_SW12009_07122022FD	LORNG_SW12010_07122022		LORNG_WLVB_001_SW_07112022	LORNG_EB214_07122022		LORNG_EB215_07202022		LORNG_HSSG01_07202022	LORNG_LS_002_SW_07202022
		QC Code		N		FD	N		N	EB		EB		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	104		103	118		1.8 U	1.8	U	1.8	U	3.5 J	2.2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	36	UJ	1.8 UJ	2 U		8.9 U	1.8	U	1.8	U	1.8 UJ	2.2 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8 U	2 U		1.8 U	1.8	U	1.8	U	1.8 U	2.2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.5	J	1.5 J	2 U		1.8 U	1.8	U	1.8	U	1.8 U	2.2 U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97560		FA97584				
			Location	NP_001	WBGB_001	FIELDQC	HSSG02	HSSG04	HSSG05	
			Sample Date	7/20/2022	7/21/2022	7/21/2022	7/21/2022	7/21/2022	7/21/2022	
			Sample ID	LORNG_NP_001_SW_07202022	LORNG_WBGB_001_SW_07212022	LORNG_EB216_07212022	LORNG_HSSG02_07212022	LORNG_HSSG04_07212022	LORNG_HSSG05_07212022	LORNG_HSSG05_07212022FD
			QC Code	N	N	EB	N	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6 U	4.8 U	3.6 U	7.1 U	6.3 U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6 U	4.8 U	3.6 U	7.1 U	6.3 U	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6 U	4.8 U	3.6 U	7.1 U	6.3 U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6 U	4.8 U	3.6 U	7.1 U	6.3 U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6 R	4.8 U	3.6 U	7.1 R	6.3 R	4 R	4 R
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6 U	4.8 U	3.6 U	7.1 U	6.3 U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	2.4 U	1.8 U	5.8 J	1.6 J	2 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	4.8 U	3.6 U	88.6	23.7	13.5	14.6 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	2.4 U	1.8 U	24.7	9.8	4.3	4.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.1 J	2.4 U	1.8 U	24.9	17.9	8.4	8.1
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	2.4 U	1.8 U	32.8	9.5	2 U	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	2.4 U	1.8 U	6 J	3.2 J	3 J	3 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 UJ	3.1 UJ	2 UJ	2 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.6 J	2.4 U	1.8 U	135	11.4	35.6	36
		Perfluorooctanoic acid (PFOA)	NG/L	1.8 U	2.4 U	1.8 U	17.9	15.6	4.2	4.6
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

				SDG	FA97560		FA97584				
				Location	NP_001	WBGB_001	FIELDQC	HSSG02	HSSG04	HSSG05	
				Sample Date	7/20/2022	7/21/2022	7/21/2022	7/21/2022	7/21/2022	7/21/2022	
				Sample ID	LORNG_NP_001_SW_07202022	LORNG_WBGB_001_SW_07212022	LORNG_EB216_07212022	LORNG_HSSG02_07212022	LORNG_HSSG04_07212022	LORNG_HSSG05_07212022	LORNG_HSSG05_07212022FD
				QC Code	N	N	EB	N	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	7.5	1.8 U	94.7	7.8	4.1	5.2	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 UJ	3.1 UJ	2 UJ	2 UJ	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	2.4 U	1.8 U	3.6 U	3.1 U	2 U	2 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA97605				FA97925		FA97957	FA99091
		Location		FIELDQC	HSSG03	HSSG06	HSSG08	SWI_002	SWI_006	SWI_007	FIELDQC
		Sample Date		7/22/2022	7/22/2022	7/22/2022	7/22/2022	8/5/2022	8/5/2022	8/6/2022	9/19/2022
		Sample ID		LORNG_EB217_07222022	LORNG_HSSG03_07222022	LORNG_HSSG06_07222022	LORNG_HSSG08_07222022	LORNG_SWI_002_SW_08052022	LORNG_SWI_006_SW_08052022	LORNG_SWI_007_SW_08062022	LORNG_EB218_09192022
		QC Code		EB	N	N	N	N	N	N	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	5.3 U	5.6 U	20 U	3.7 U	3.7 U	3.7 U	3.4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	5.3 U	5.6 U	20 U	3.7 U	3.7 U	3.7 U	1.9 J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	5.3 U	5.6 U	20 U	3.7 U	3.7 U	3.7 U	3.4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	5.3 U	5.6 U	20 U	3.7 U	3.7 U	3.7 U	3.4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 U	5.3 R	28 R	20 UJ	19 R	19 R	19 R	3.4 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	5.3 U	5.6 U	20 U	3.7 U	3.7 U	3.7 U	3.4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2.6 U	2.7 J	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	2.8 J	54.5	20 U	3.9 J	2.9 J	1.9 J	3.4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2.6 U	2.8 U	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2.6 U	2.8 U	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2.6 U	2.8 UJ	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2.6 U	2.8 U	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	2.6 U	17.3	10 U	2.3 J	1.9 U	1.1 J	1.7 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	2.6 U	38.9	42.2	12.8	1.9 U	6	1.7 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	2.6 U	20.7	10 U	3.3 J	1.9 U	1.6 J	1.7 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2.6 U	2.8 U	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2.6 U	14.5	10 U	1.9 U	1.9 U	1.9 U	1.7 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2.6 UJ	2.8 UJ	10 U	9.3 UJ	1.9 U	9.3 UJ	1.7 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 U	2.6 U	51	58.3	18.8	2.2 J	10.1	1.7 U
		Perfluorooctanoic acid (PFOA)	NG/L	2 U	1.5 J	38.4	10 U	4	1.1 J	2.2 J	1.7 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2.6 U	2.8 U	10 U	1.9 U	1.9 U	1.9 U	1.7 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA97605						FA97925				FA97957		FA99091	
			Location	FIELDQC		HSSG03		HSSG06		HSSG08		SWI_002		SWI_006		SWI_007		FIELDQC	
			Sample Date	7/22/2022		7/22/2022		7/22/2022		7/22/2022		8/5/2022		8/5/2022		8/6/2022		9/19/2022	
			Sample ID	LORNG_EB217_07222022		LORNG_HSSG03_07222022		LORNG_HSSG06_07222022		LORNG_HSSG08_07222022		LORNG_SWI_002_SW_08052022		LORNG_SWI_006_SW_08052022		LORNG_SWI_007_SW_08062022		LORNG_EB218_09192022	
			QC Code	EB		N		N		N		N		N		N		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2.6	U	24.1		10	U	3.3	J	1.9	U	1.2	J	1.7	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2.6	UJ	2.8	UJ	10	U	9.3	UJ	9.3	U	1.9	U	1.7	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2.6	U	2.8	UJ	10	U	1.9	U	1.9	U	1.9	U	1.7	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2.6	U	2.8	U	10	U	1.9	U	1.9	U	1.9	U	1.7	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date:12/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	170361			170362			
			Location	SW/SD11004	SW/SD11008	SW/SD11009	AA20SD-01	AA20SD-02	SW/SD18002	SW/SD18004
			Sample Date	6/21/2022	6/21/2022	6/21/2022	6/18/2022	6/18/2022	6/18/2022	6/19/2022
			Sample ID	LORNG-SD11004_06212022_CT	LORNG-SD11008_06212022_CT	LORNG-SD11009_06212022_CT	LORNG_AA20SD01_06182022_CT	LORNG_AA20SD02_06182022_CT	LORNG_SD18002_06182022_CT	LORNG_SD18004_06192022_CT
			QC Code	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	31,300	22,700	4,150	4,140	2,600	7,620	663,000
			UG/G							

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
NG/L = nanograms per liter

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Date: 11/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG		170701											
			Location	SW/SD18005	GB_003		GB_004		LORNG-LT-10-06A		LT-16				LT-17	
			Sample Date	6/19/2022	7/7/2022		7/7/2022		7/7/2022		7/7/2022				7/7/2022	
			Sample ID	LORNG_SD18005_06192022_CT	LORNG_GB_003_SD_07072022_C		LORNG_GB_004_SD_07072022_C		LORNG_LT1006A_SD_07072022_C		LORNG_LT16_SD_07072022_C		LORNG_LT16_SD_07072022FD_C		LORNG_LT17_SD_07072022_C	
			QC Code	N	N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	462,000		17,500		74,900		6,570	J	3,780	J	12,600	J	11,700	
			UG/G														

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = nanograms per liter

Prepared by: AKN
Date: 11/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

| | | | SDG | 170702 | | |

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	170702						170731									
			Location	SD22001		SD22002	SD22003	BB_001	EBGB_001	EBGB_002	EBGB_003	EBGB_005	EBGB_006		LORNG-LT-05A	LORNG-LT-10-01			
			Sample Date	7/8/2022		7/8/2022	7/8/2022	7/9/2022	7/9/2022	7/10/2022	7/9/2022	7/10/2022	7/9/2022		7/10/2022	7/10/2022			
			Sample ID	LORNG_SD22001_07082022FD_C	LORNG_SD22001_SD_07082022_C	LORNG_SD22002_SD_07082022_C	LORNG_SD22003_SD_07082022_C	LORNG_BB_001_SD_07092022_C	LORNG_EBGB_001_SD_07092022_C	LORNG_EBGB_002_07102022_C	LORNG_EBGB_003_SD_07092022_C	LORNG_EBGB_005_SD_07102022_C	LORNG_EBGB_006_SD_07092022_C	LORNG_EBGB_006_SD_7092022FD_C	LORNG_LT05A_SD_07102022_C	LORNG_LT1001_SD_07102022_C			
			QC Code	FD	N	N	N	N	N	N	N	N	N	FD	N	N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	5,180		3,950		79,600		6,440		6,330		18,100		47,700		28,500		366,000		116,000		116,000		12,900		27,100			
			UG/G																												

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter

Prepared by: AKN
Date: 11/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	170731																					
			Location	LORNG-LT-10-02		LORNG-LT-10-05		LS_001		LT-05		SW/SD16005				SW/SD16006		SW/SD17006		SW/SD17007		SW/SD21003		WBGB_004		WBGB_005	
			Sample Date	7/10/2022		7/9/2022		7/10/2022		7/10/2022		7/10/2022				7/10/2022		7/9/2022		7/9/2022		7/10/2022		7/10/2022		7/10/2022	
			Sample ID	LORNG_LT1002_SD_07102022_C		LORNG_LT1002_SD_07102022FD_C		LORNG_LT1005_SD_07092022_C		LORNG_LS_001_SD_07102022_C		LORNG_LT05_SD_07102022_C		LORNG_SD16005_07102022_C		LORNG_SD16005_07102022FD_C		LORNG_SD16006_07102022_C		LORNG_SD17006_07092022_C		LORNG_SD17007_07092022_C		LORNG_SD21003_07102022_C		LORNG_WBGB_004_SD_07102022_C		LORNG_WBGB_005-SD_07102022_C	
			QC Code	N		FD		N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	6,920	J	15,400	J	78,100		11,800		16,400		6,570	J	1,210	J	12,500		2,370		15,400		6,350		91,200		81,300	
			UG/G																								

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	170731		170732															
			Location	WLB_001		LT-04				SD08002		SD21001		SD21002		SD8002		SD9002		SW/SD11007	
			Sample Date	7/9/2022		7/11/2022				7/11/2022		7/11/2022		7/11/2022		7/11/2022		7/11/2022		7/11/2022	
			Sample ID	LORNG_WLB_001_SD_07092022_C		LORNG_LT04_SD_07112022_C		LORNG_LT04_SD_07112022FD_C		LORNG_SD08002_07112022_C		LORNG_SD21001_07112022_C		LORNG_SD21002_07112022_C		LORNG_SD8002_07112022FD_C		LORNG_SD9002_07112022_C		LORNG_SD11007_07112022_C	
			QC Code	N		N		FD		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	29,900		12,600		9,750		15,800		39,800		10,900		15,100		6,950		9,020	
			UG/G																		

			SDG	170732					
			Location	SW/SD12011		WBGB_002		WBGB_003	
			Sample Date	7/11/2022		7/11/2022		7/11/2022	
			Sample ID	LORNG_SD12011_07112022_C		LORNG_WBGB_002_SD_07112022_C		LORNG_WBGB_003_SD_07112022_C	
			QC Code	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG	184,000		198,000		4,130	
			UG/G						

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter

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Date: 11/9/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP3620						SP3919		
			Location	LT-03	SW/SD11005	SW/SD11006	SW/SD12007	SW/SD12010	WLVB_001	LS_002	NP_001	WBGB_001
			Sample Date	7/11/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/11/2022	7/20/2022	7/20/2022	7/21/2022
			Sample ID	LORNG_LT03_SD_07112022_K	LORNG_SD11005_07122022_K	LORNG_SD11006_07122022_K	LORNG_SD12007_07122022_K	LORNG_SD12010_07122022_K	LORNG_WLVB_001_SD_07112022_K	LORNG_LS_002_SD_07202022_K	LORNG_NP_001_SD_07202022_K	LORNG_WBGB_001_SD_07212022_K
			QC Code	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
WetChem	T	TOTAL ORGANIC CARBON	MG/KG									
			UG/G	5,400	1,900	2,500	2,500	100,000	140,000	34,000	5,300	310,000

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
NG/L = nanograms per liter

Prepared by: AKN
Date: 11/9/22
Checked by: ALJ
Date: 12/6/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
170701	LYDKHN	T	1162826	LORNG_LT1006A_SD_07072022_C	TOTAL ORGANIC CARBON	6570	Y	6570	J	LDD	MG/KG
			1162824	LORNG_LT16_SD_07072022_C	TOTAL ORGANIC CARBON	3780		3780	J	FDD	MG/KG
			1162827	LORNG_LT16_SD_07072022FD_C	TOTAL ORGANIC CARBON	12600		12600	J	FDD	MG/KG
170702	LYDKHN	T	1162834	LORNG_LT02_SD_07082022_C	TOTAL ORGANIC CARBON	2190		2190	J	FDD	MG/KG
			1162835	LORNG_LT02_SD_07082022FD_C	TOTAL ORGANIC CARBON	7860		7860	J	FDD	MG/KG
			1162836	LORNG_LT14_SD_07082022_C	TOTAL ORGANIC CARBON	1630	Y	1630	J	LDD	MG/KG
170731	LYDKHN	T	1163434	LORNG_LT1002_SD_07102022_C	TOTAL ORGANIC CARBON	6920		6920	J	FDD	MG/KG
			1163435	LORNG_LT1002_SD_07102022FD_C	TOTAL ORGANIC CARBON	15400		15400	J	FDD	MG/KG
			1163424	LORNG_SD16005_07102022_C	TOTAL ORGANIC CARBON	6570		6570	J	FDD	MG/KG
			1163425	LORNG_SD16005_071092022FD_C	TOTAL ORGANIC CARBON	1210		1210	J	FDD	MG/KG
FA96676	M537	T	FA96676-4	LORNG_AA20SW01_06182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.7	U	1.7	UJ	RIS	NG/L
			FA96676-5	LORNG_AA20SW02_06182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.7	U	1.7	UJ	RIS	NG/L
			FA96676-7	LORNG_SD18004_06192022	4:2 Fluorotelomer sulfonate (4:2 FTS)	8.5	U	8.5	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.5	U	8.5	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorobutanesulfonic acid (PFBS)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	8.5	U	8.5	UJ	RIS	UG/KG

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Date:11/9/22
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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96676	M537	T	FA96676-7	LORNG_SD18004_06192022	Perfluorododecanoic acid (PFDoA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluoroheptanoic acid (PFHpA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorohexanesulfonic acid (PFHxS)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorohexanoic acid (PFHxA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorooctanoic acid (PFOA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluoropentanesulfonic acid (PFPeS)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluoropentanoic acid (PFPeA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	8.5	U	8.5	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	8.5	U	8.5	UJ	RIS	UG/KG
			FA96676-8	LORNG_SD18005_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.3	U	5.3	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	5.3	U	5.3	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	5.3	U	5.3	UJ	RIS	UG/KG
			FA96676-9	LORNG_SW18002_06182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.7	U	1.7	R	RIS	NG/L

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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA96676	M537	T	FA96676-10	LORNG_SW18004_06192022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.4	U	3.4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	6.6	=	6.6	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	R	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.4	J	2.4	J	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	12.1	=	12.1	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.7	U	1.7	UJ	RIS	NG/L
			FA96676-11	LORNG_SW18005_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	R	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6	=	4.6	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.7	U	1.7	UJ	RIS	NG/L
FA96725	M537	T	FA96725-1	LORNG_SD11004_06212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
			FA96725-2	LORNG_SD11008_06212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96725-4	LORNG_SW11004_06212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	HHL, RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.1	U	9.1	UJ	HHL, RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.8	U	1.8	UJ	HHL	NG/L
			FA96725-5	LORNG_SW11008_06212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	17	U	17	R	HHL, RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.6	U	8.6	R	HHL, RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.6	U	8.6	UJ	HHL, RIS	NG/L
FA96725	M537	T	FA96725-6	LORNG_SW11009_06212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	U	1.7	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.7	U	1.7	R	RIS	NG/L

Prepared by:AKN
Date:11/9/22
Checked by: ALJ
Date: 12/6/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97153	M537	T	FA97153-1	LORNG_AA19SW02_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA97153-2	LORNG_AA19SW03_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	23.6	=	23.6	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97153-5	LORNG_GB_003_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA97153-11	LORNG_GB_004_SD_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.3	U	6.3	UJ	RIS	UG/KG
			FA97153-12	LORNG_GB_004_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97153-14	LORNG_LT1006A_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA97153-6	LORNG_LT16_SD_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.81	U	0.81	UJ	RIS	UG/KG
			FA97153-15	LORNG_LT16_SD_07072022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.72	U	0.72	UJ	RIS	UG/KG

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FA97153	M537	T	FA97153-7	LORNG_LT16_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	R	RIS	NG/L
			FA97153-8	LORNG_LT16_SW_07072022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA97153-17	LORNG_LT17_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA97153-9	LORNG_WBGB_SED001_FP_07062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.7	U	0.7	UJ	RIS	UG/KG
			FA97153-10	LORNG_WBGB_SED003_FP_07062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.67	U	0.67	UJ	RIS	UG/KG
FA97181	M537	T	FA97181-14	LORNG_LMR_001_SW_07082022	4:2 Fluorotelomer sulfonate (4:2 FTS)	4	U	4	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	4	U	4	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	U	2	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4	U	4	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	2	U	2	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	2	U	2	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	2	U	2	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2	U	2	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	UJ	RIS	NG/L

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FA97181	M537	T	FA97181-4	LORNG_LMR_002_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
			FA97181-6	LORNG_LS_003_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.8	U	3.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
			FA97181-17	LORNG_LT02_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	RIS	NG/L
			FA97181-18	LORNG_LT02_SW_07082022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4.4	J	4.4	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
			FA97181-34	LORNG_LT1006_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97181-22	LORNG_LT13_SD_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.7	U	1.7	UJ	RIS	UG/KG
			FA97181-23	LORNG_LT13_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L

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FA97181	M537	T	FA97181-25	LORNG_LT13A_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97181-20	LORNG_LT14_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97181-8	LORNG_LT14A_SW_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.7	U	3.7	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.7	U	3.7	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	HHL, RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	RIS	NG/L
			FA97181-35	LORNG_LT15_SD_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA97181-36	LORNG_LT15_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4	J	4	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97181-9	LORNG_LT18_SW_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	2.7	J	2.7	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	RIS	NG/L

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FA97181	M537	T	FA97181-11	LORNG_LT19_SW_07072022	4:2 Fluorotelomer sulfonate (4:2 FTS)	3.8	U	3.8	UJ	RIS	NG/L
					6:2 Fluorotelomer sulfonate (6:2 FTS)	3.8	U	3.8	UJ	RIS	NG/L
					8:2 Fluorotelomer sulfonate (8:2 FTS)	3.8	U	3.8	UJ	RIS	NG/L
					N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	3.8	U	3.8	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.8	U	3.8	R	RIS	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.8	U	3.8	UJ	RIS	NG/L
					Perfluorodecane sulfonate (PFDS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	RIS	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	10.9	=	10.9	J	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	13.4	=	13.4	J	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	2.7	J	2.7	J	RIS	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	4.4	=	4.4	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	RIS	NG/L
			FA97181-12	LORNG_SW19004_07072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	2.9	J	2.9	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L

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FA97181	M537	T	FA97181-29	LORNG_SW22001_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4.8	J	4.8	J	RIS	NG/L
			FA97181-30	LORNG_SW22001_07082022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4.6	J	4.6	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
			FA97181-31	LORNG_SW22002_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	6.3	J	6.3	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97181-32	LORNG_SW22003_07082022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.4	U	4.4	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2.2	U	2.2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.2	U	2.2	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2.2	U	2.2	UJ	RIS	NG/L
FA97218	M537	T	FA97218-3	LORNG_LT04_SW_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA97218-4	LORNG_LT04_SW_07112022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	UJ	RIS	NG/L
			FA97218-16	LORNG_SD12011_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.7	U	5.7	UJ	RIS	UG/KG
			FA97218-17	LORNG_SW08002_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	J	2	J	RIS	NG/L
			FA97218-18	LORNG_SW08002_07112022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97218-9	LORNG_SW09002_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA97218-10	LORNG_SW11007_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L

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FA97218	M537	T	FA97218-11	LORNG_SW12011_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
			FA97218-12	LORNG_SW21001_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	11.4	=	11.4	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97218-19	LORNG_WBGB_002_SD_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.1	U	5.1	UJ	RIS	UG/KG
			FA97218-20	LORNG_WBGB_002_SW_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
			FA97218-22	LORNG_WBGB_003_SW_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.5	U	3.5	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
FA97236	M537	T	FA97236-2	LORNG_BB_001_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
			FA97236-14	LORNG_EBGB_001_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97236-39	LORNG_EBGB_002_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97236-6	LORNG_EBGB_003_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97236-50	LORNG_EBGB_005_SD_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.8	U	6.8	R	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	6.8	U	6.8	UJ	RIS	UG/KG

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FA97236	M537	T	FA97236-53	LORNG_EBGB_005_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	10	U	10	UJ	RIS	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.2	J	2.2	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	10	U	10	UJ	RIS	NG/L
			FA97236-30	LORNG_EBGB_006_SD_07092022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	18	U	18	UJ	RIS	UG/KG
			FA97236-16	LORNG_EBGB_006_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	R	RIS	NG/L
			FA97236-17	LORNG_EBGB_006_SW_07092022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	4	U	4	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
			FA97236-57	LORNG_LS_001_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	R	RIS	NG/L
			FA97236-43	LORNG_LT05_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L

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Checked by: ALJ
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA97236	M537	T	FA97236-45	LORNG_LT05A_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	20	U	20	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
			FA97236-59	LORNG_LT1001_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	10	U	10	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	10	U	10	UJ	RIS	NG/L
			FA97236-65	LORNG_LT1002_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	12.4	J	12.4	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	132	=	132	J	FDD	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97236-66	LORNG_LT1002_SW_07102022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	13.7	J	13.7	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctanesulfonic acid (PFOS)	200	=	200	J	FDD	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97236-12	LORNG_LT1005_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97236-47	LORNG_SW05001_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	80	U	80	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	58.8	J	58.8	J	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	40	U	40	UJ	RIS	NG/L

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FA97236	M537	T	FA97236-34	LORNG_SW16005_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	18	J	18	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	10	U	10	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	10	U	10	UJ	RIS	NG/L
			FA97236-35	LORNG_SW16005_07102022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
			FA97236-48	LORNG_SW16006_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	10	U	10	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	10	U	10	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	10	U	10	UJ	RIS	NG/L
			FA97236-19	LORNG_SW17006_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
			FA97236-36	LORNG_SW17007_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97236-68	LORNG_SW21003_07102022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	18	U	18	UJ	RIS	NG/L
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	14	J	14	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	R	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L

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FA97236	M537	T	FA97236-69	LORNG_SW21004_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	J	2.8	J	RIS	NG/L
			FA97236-70	LORNG_WBGB_004_SD_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	21	U	21	UJ	RIS	UG/KG
			FA97236-71	LORNG_WBGB_004_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	UJ	RIS	NG/L
			FA97236-72	LORNG_WBGB_005_SD_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2.6	U	2.6	UJ	RIS	UG/KG
					Perfluorotetradecanoic acid (PFTeDA)	2.6	U	2.6	UJ	RIS	UG/KG
			FA97236-60	LORNG_WBGB_005_SW_07102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	7.4	=	7.4	J	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	8.9	U	8.9	UJ	RIS	NG/L
					Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	UJ	RIS	NG/L
			FA97236-24	LORNG_WLB_001_SW_07092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
FA97285	M537	T	FA97285-3	LORNG_LT03_SW_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	MSL, RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	10	U	10	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	MSL, MSD	NG/L
			FA97285-12	LORNG_SD12010_07122022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.6	U	0.6	R	RIS	UG/KG
			FA97285-6	LORNG_SW11005_07122022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA97285-7	LORNG_SW11006_07122022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
			FA97285-13	LORNG_SW12007_07122022	Perfluorotetradecanoic acid (PFTeDA)	45	U	45	UJ	RIS	NG/L
			FA97285-14	LORNG_SW12009_07122022	Perfluorotetradecanoic acid (PFTeDA)	36	U	36	UJ	RIS	NG/L

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FA97285	M537	T	FA97285-15	LORNG_SW12009_07122022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	71	U	71	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA97285-8	LORNG_SW12010_07122022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	80	U	80	R	RIS	NG/L
			FA97285-9	LORNG_WLVB_001_SD_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.4	U	3.4	R	RIS	UG/KG
			FA97285-10	LORNG_WLVB_001_SW_07112022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	R	RIS	NG/L
FA97560	M537	T	FA97560-2	LORNG_HSSG01_07202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	7.2	=	7.2	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	U	1.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.8	U	1.8	UJ	RIS	NG/L
			FA97560-3	LORNG_HSSO01_07202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.7	U	1.7	UJ	RIS	UG/KG
			FA97560-4	LORNG_LS_002_SD_07202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.8	U	9.8	UJ	RIS	UG/KG
			FA97560-5	LORNG_LS_002_SW_07202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.4	U	4.4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.2	U	2.2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.2	U	2.2	UJ	RIS	NG/L
			FA97560-7	LORNG_NP_001_SW_07202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	3.6	U	3.6	R	RIS	NG/L
FA97584	M537	T	FA97584-2	LORNG_HSSG02_07212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	7.1	U	7.1	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.6	U	3.6	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	3.6	U	3.6	UJ	RIS	NG/L
			FA97584-3	LORNG_HSSG04_07212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.3	U	6.3	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.1	U	3.1	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	3.1	U	3.1	UJ	RIS	NG/L

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FA97584	M537	T	FA97584-4	LORNG_HSSG05_07212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97584-5	LORNG_HSSG05_07212022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorobutanoic acid (PFBA)	14.6	=	14.6	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	UJ	RIS	NG/L
			FA97584-6	LORNG_HSSO02_07212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	17	U	17	UJ	RIS	UG/KG
			FA97584-8	LORNG_HSSO05_07212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	UG/KG
			FA97584-9	LORNG_HSSO05_07212022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	18	U	18	UJ	RIS	UG/KG
FA97605	M537	T	FA97605-2	LORNG_HSSG03_07222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.3	U	5.3	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.6	U	2.6	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.6	U	2.6	UJ	RIS	NG/L
			FA97605-3	LORNG_HSSG06_07222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	28	U	28	R	RIS	NG/L
					Perfluorododecanoic acid (PFDoA)	2.8	U	2.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	U	2.8	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.8	U	2.8	UJ	RIS	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2.8	U	2.8	UJ	RIS	NG/L
			FA97605-4	LORNG_HSSG08_07222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L

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FA97605	M537	T	FA97605-5	LORNG_HSSO03_07222022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	12	U	12	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	12	U	12	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	12	U	12	UJ	RIS	UG/KG
			FA97605-7	LORNG_HSSO08_07222022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.8	U	9.8	UJ	RIS	UG/KG
FA97925	M537	T	FA97925-1	LORNG_SWI_002_SW_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	9.3	U	9.3	UJ	RIS	NG/L
			FA97925-2	LORNG_SWI_006_SW_08052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
FA97957	M537	T	FA97957-1	LORNG_SWI_007_SW_08062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.3	U	9.3	UJ	RIS	NG/L
FA99091	M537	T	FA99091-2	LORNG_FHSSO01_09192022	4:2 Fluorotelomer sulfonate (4:2 FTS)	6.6	U	6.6	UJ	RIS	UG/KG
					6:2 Fluorotelomer sulfonate (6:2 FTS)	6.6	U	6.6	UJ	RIS	UG/KG
					8:2 Fluorotelomer sulfonate (8:2 FTS)	6.6	U	6.6	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.6	U	6.6	R	RIS	UG/KG
					Perfluorobutanesulfonic acid (PFBS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluoroheptanoic acid (PFHpA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorohexanesulfonic acid (PFHxS)	6.6	U	6.6	UJ	RIS	UG/KG

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FA99091	M537	T	FA99091-2	LORNG_FHSSO01_09192022	Perfluorohexanoic acid (PFHxA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorooctanoic acid (PFOA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluoropentanesulfonic acid (PFPeS)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluoropentanoic acid (PFPeA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	6.6	U	6.6	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	6.6	U	6.6	UJ	RIS	UG/KG
			FA99091-3	LORNG_FHSSO02_09192022	4:2 Fluorotelomer sulfonate (4:2 FTS)	5.6	U	5.6	UJ	RIS	UG/KG
					8:2 Fluorotelomer sulfonate (8:2 FTS)	5.6	U	5.6	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.6	U	5.6	R	RIS	UG/KG
					Perfluorobutanesulfonic acid (PFBS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluoroheptanoic acid (PFHpA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorohexanesulfonic acid (PFHxS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorohexanoic acid (PFHxA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorooctanoic acid (PFOA)	5.6	U	5.6	UJ	RIS	UG/KG

Prepared by:AKN
Date:11/9/22
Checked by: ALJ
Date: 12/6/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA99091	M537	T	FA99091-3	LORNG_FHSSO02_09192022	Perfluoropentanesulfonic acid (PFPeS)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluoropentanoic acid (PFPeA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	5.6	U	5.6	UJ	RIS	UG/KG
					Perfluoroundecanoic acid (PFUnA)	5.6	U	5.6	UJ	RIS	UG/KG
			FA99091-4	LORNG_FHSSO03_09192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2.4	U	2.4	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	2.4	U	2.4	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	2.4	U	2.4	UJ	RIS	UG/KG

Notes:

J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample result is considered unusable for project objectives
FDD = Field duplicate RPD criteria exceeded
HHL = Sampling to analysis holding time exceeded
LDD = Lab duplicate RPD criteria exceeded
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
NG/L = nanograms per liter
UG/L = micrograms per liter

Prepared by:AKN
Date:11/9/22
Checked by: ALJ
Date: 12/6/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
170701	LORNG_LT16_SD_07072022_C	LORNG_LT16_SD_07072022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	3780	J	12600	J	108	FDD
170702	LORNG_LT02_SD_07082022_C	LORNG_LT02_SD_07082022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	2190	J	7860	J	113	FDD
	LORNG_SD22001_SD_07082022_C	LORNG_SD22001_07082022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	3950		5180		27	
170731	LORNG_EBGB_006_SD_07092022_C	LORNG_EBGB_006_SD_7092022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	116000		116000		0	
	LORNG_LT1002_SD_07102022_C	LORNG_LT1002_SD_07102022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	6920	J	15400	J	76	FDD
	LORNG_SD16005_07102022_C	LORNG_SD16005_071092022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	6570	J	1210	J	138	FDD
170732	LORNG_SD08002_07112022_C	LORNG_SD8002_07112022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	15800		15100		5	
	LORNG_LT04_SD_07112022_C	LORNG_LT04_SD_07112022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	12600		9750		26	
FA96676	LORNG_AA20SD02_06182022	LORNG_AA20SD02_06182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.5	J	1.1	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.3	U	1.3	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97153	LORNG_LT16_SD_07072022	LORNG_LT16_SD_07072022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	0.81	U	0.72	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.81	U	0.72	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.81	U	0.72	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	0.81	U	0.72	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	0.81	UJ	0.72	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	0.81	U	0.72	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	0.81	U	0.72	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97153	LORNG_LT16_SW_07072022	LORNG_LT16_SW_07072022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	3.6	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	3.6	U	3.6	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	3.6	R	3.6	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	2.3	J	2.4	J	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	J	1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.8	UJ	1.8	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	4.5		1.7	J	±LOQ	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.8	R	1.8	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.8	U	1.8	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97181	LORNG_LT02_SD_07082022	LORNG_LT02_SD_07082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	2.3	J	1.5	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97181	LORNG_LT02_SW_07082022	LORNG_LT02_SW_07082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	20	R	4	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.4	J	1.4	J	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	3.5	J	4.4	J	NC	RIS
				Perfluorodecane sulfonate (PFDS) (UG/KG)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	4		3.7	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	20.1		21.6		1.8	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	5.1		5.8		3.2	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	2	U	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	2	U	2	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	39.3		42.4		1.9	
				Perfluorooctanoic acid (PFOA) (UG/KG)	4.8		5.7		4.3	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.5	J	2	J	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	8.4		7.8		1.9	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	2	U	2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97181	LORNG_SD22001_07082022	LORNG_SD22001_07082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.3	U	1.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.3	U	1.8	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.3	U	1.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.3	U	1.3	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
June - September 2022 Surface Water/Sediment Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97181	LORNG_SW22001_07082022	LORNG_SW22001_07082022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	20	UJ	4	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	J	1.8	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.8	J	4.6	J	NC	RIS
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.2		4.8		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	29.9		28.8		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.6		8.1		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1	J	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.2	J	2	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	63.8		60		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	7		6.7		4	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.3	J	2.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	10.5		11.1		6	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97218	LORNG_LT04_SD_07112022	LORNG_LT04_SD_07112022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.3	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.3	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	2.3	J	3		26	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.3	U	1.2	U	NC	

Prepared by: AKN 11/9/22
Checked by: ALJ 12/6/22

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97218	LORNG_LT04_SW_07112022	LORNG_LT04_SW_07112022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	2.2	J	2.1	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	20	R	20	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	5.1		4.9		4	
				Perfluorobutanoic acid (PFBA) (UG/KG)	6.1	J	5.9	J	3	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	4.5		4.2		7	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	8.7		8.7		0	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	63.1		59.1		7	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	14.4		13.9		4	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.5	J	1.5	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	2	U	10	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	218		230		5	
				Perfluorooctanoic acid (PFOA) (UG/KG)	10.9		10.1		8	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	7.1		6.3		12	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	17.4		17.7		2	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	10	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	2	U	2	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97218	LORNG_SD08002_07112022	LORNG_SD08002_07112022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	3.6		3.1		15	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97218	LORNG_SW08002_07112022	LORNG_SW08002_07112022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	11.1		11.2		0.9	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	2.1	J	2.4	J	13.3	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	3.6	R	3.6	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	2.5	J	2.5	J	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	5.3	J	5.5	J	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.7	J	1.7	J	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	8.8		8.9		1.1	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	51.1		49.9		2.4	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	13.2		13.3		0.8	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.8	U	1.8	U	0.0	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	J	1.3	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	2	J	2.1	J	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	63.8		71.5		11.4	
				Perfluorooctanoic acid (PFOA) (UG/KG)	12.2		12.4		1.6	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	3.6		3.4	J	5.7	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	15.1		15.3		1.3	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.8	U	1.8	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_EBGB_006_SW_07092022	LORNG_EBGB_006_SW_07092022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	3.6	R	4	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	2	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.6	UJ	4	UJ	NC	RIS
				Perfluorodecane sulfonate (PFDS) (NG/L)	1.8	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.8	U	2	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.8	U	2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	R	2	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.8	U	2	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.9	J	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.8	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_EBGB_006_SD_07092022	LORNG_EBGB_006_SD_07092022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.6	U	3.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	3.6	U	3.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	3.6	U	3.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	18	U	18	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	3.6	U	18	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	3.6	U	3.7	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_LT1002_SD_07102022	LORNG_LT1002_SD_07102022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.6	U	1.5	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.6	U	1.5	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.6	U	1.5	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.6	U	1.5	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.6	U	1.5	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	J	1.4	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.6	U	1.5	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.6	U	1.5	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_LT1002_SW_07102022	LORNG_LT1002_SW_07102022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	3.6	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	8.3		9.2		10	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	3.6	U	1.8	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	18	R	18	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	5.5		4.5		20	
				Perfluorobutanoic acid (PFBA) (UG/KG)	12.4	J	13.7	J	10	RIS
				Perfluorodecane sulfonate (PFDS) (UG/KG)	8.9	U	8.9	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	8.9	UJ	8.9	UJ	NC	RIS
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	3	J	3.6		18	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	13		13.4		3	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	91.3		96.8		6	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	24.1		25		4	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.8	U	1.8	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	2.2	J	2.8	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.8	U	8.9	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	132	J	200	J	41	FDD
				Perfluorooctanoic acid (PFOA) (UG/KG)	24.8		26.9		8	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	6.6		7.1		7	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	25.3		26		3	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	8.9	UJ	8.9	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	8.9	UJ	8.9	UJ	NC	RIS
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	8.9	U	8.9	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_SD16005_07102022	LORNG_SD16005_07102022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.4	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.4	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.4	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_SW16005_07102022	LORNG_SW16005_07102022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	20	U	20	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	20	R	20	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	10	U	10	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	18	J	19.4	J	NC	RIS
				Perfluorodecane sulfonate (PFDS) (UG/KG)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	10	UJ	2	U	NC	RIS
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	6		5.9		2	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	29.2		29.8		2	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	6.4	J	8.5	J	NC	RIS
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	2	U	2	U	0	
				Perfluorononanoic acid (PFNA) (UG/KG)	2.1	J	1.9	J	10	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	10	R	10	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	23.5		23.9		2	
				Perfluorooctanoic acid (PFOA) (UG/KG)	7.9		8		1	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	10	U	10	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	8.6	J	9.6	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	10	R	10	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	10	UJ	2	U	NC	RIS
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	2	U	2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97236	LORNG_WBGB_SED004_FP_07092022	LORNG_WBGB_SED004_FP_07092022F	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.6	U	1.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.6	U	1.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.6	U	1.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.6	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.6	U	1.7	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	5.7		5		13	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.6	U	1.7	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.6	U	1.7	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97285	LORNG_SW12009_07122022	LORNG_SW12009_07122022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	5.5	J	5.2	J	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	199		197		1	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	64.8		60.9		6	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	71	U	71	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	32.3		32.2		0	
				Perfluorobutanoic acid (PFBA) (NG/L)	32.5		32.5		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	34.6		38.9		12	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.5	J	2.3	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.99	J	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	59.7		55.7		7	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	54.1		53.5		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	418		399		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	146		142		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	24.5		18.7		27	
				Perfluorononanoic acid (PFNA) (NG/L)	5.9		5.8		2	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	36.2		37.5		4	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	4010		3770		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	83.9		83.7		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	51.1		49.5		3	
				Perfluoropentanoic acid (PFPeA) (NG/L)	104		103		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	36	UJ	1.8	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.5	J	1.5	J	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97584	LORNG_HSSG05_07212022	LORNG_HSSG05_07212022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4	U	4	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	4	U	4	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	4	U	4	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	4	U	4	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	4	R	4	R	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	4	U	4	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	13.5		14.6	J	8	RIS
				Perfluorodecane sulfonate (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.3		4.4		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	8.4		8.1		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2	U	2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	3	J	3	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	UJ	2	UJ	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	35.6		36		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.2		4.6		9	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.1		5.2		24	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	UJ	2	UJ	NC	RIS
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA97584	LORNG_HSSO05_07212022	LORNG_HSSO05_07212022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	4	U	3.6	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	4	U	3.6	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	20	U	18	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	4	U	3.6	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	20	UJ	18	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	4	U	3.6	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	4	U	3.6	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	20	U	18	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	4	U	3.6	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	4	U	3.6	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	4	U	3.6	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	4	U	3.6	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	20	U	18	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	20	U	3.6	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	25.9		24.4		6	
				Perfluorooctanoic acid (PFOA) (UG/KG)	20	U	18	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	4	U	3.6	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	4	U	3.6	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	4	U	3.6	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	4	U	3.6	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag

Notes:

1 = Per QPP, RPD Limit 30 (SW) or 50 (SED) unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

ng/L = nanograms per liter

RPD = relative percent difference

SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations

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Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil samples were collected at the Former Loring Air Force Base in Limestone, Maine, in May through August 2022. Per- and polyfluoroalkyl substances (PFAS) samples were submitted to SGS North America Laboratory in Orlando, Florida (SGS).

SGS analyzed 347 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 44 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Methods 8011 and 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polynuclear Aromatic Hydrocarbons (PAHs) by SW846 Methods 8270C Selected Ion Monitoring (SIM) and 8270D SIM
- Pesticides by SW846 Method 8081B
- Polychlorinated Biphenyls (PCBs) by SW846 Method 8082A
- Metals by SW846 Methods 6010C, 6020A, and 7470A
- Perchlorate (subcontracted to Eurofins Test America Laboratory (TAL) in South Burlington, Vermont) by SW846 Method 6850
- Total Organic Carbon (subcontracted to CT Laboratories in Baraboo, WI) by Lloyd Kahn

One split sample was submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as an interlaboratory comparison assessment sample. Vista analyzed the sample for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a). An evaluation of split sample results is presented in Section 2.1.5.

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) for Remedial Investigation at Former Loring Air Force Base (Wood, 2021). Data validation levels are

established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to

sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CCL = Continuing calibration recovery less than the lower control limit
CFD = Dual column RPD exceeds the control limit
CRR = Result exceeds calibration range
CVHL = Continuing calibration recovery greater than the upper control limit
FDD = Field duplicate RPD criteria exceeded
HHL = Holding time for prep or analysis exceeded
ISL = Internal standard recovery less than the lower control limit
LBM = Laboratory blank contamination
LCD = Laboratory control limits RPD criteria exceeded
LCL = Laboratory control sample recovery less than the lower control limit
LDD = Laboratory duplicate RPD criteria exceeded
MSD = Matrix spike RPD criteria exceeded
MSH = Matrix spike recovery greater than the upper control limit
MSL = Matrix spike recovery less than the lower control limit
RIS = Extracted internal standard outside the control limit
SGH = Surrogate recovery greater than the upper control limit
SGL = Surrogate recovery less than the lower control limit
SVLL = Second source verification recovery less than the lower control limit
TBG = Trip blank contamination greater than the reporting limit
TBL = Trip blank contamination less than the reporting limit

One interlaboratory split sample was submitted to Vista as an additional quality assurance step. Data validation was not planned for Vista data unless gross deviations were observed. No gross deviations were observed. Results are presented in this report to complete the interlaboratory comparison only and are not included in the final data set of the Loring RI sampling program and not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QPP. A summary of data validation qualifications and interpretations on data usability are provided in this section. More detailed discussions are provided in Section 2.0.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for MS/MSD recovery, field duplicate precision, and extracted internal standard (EIS) recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as estimated values. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

The non-detect result for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in sample LORNG_SB24004_2-3_06182022 was qualified rejected (R) based on percent recovery of the

associated EIS which was less than the rejection QC limit of 20. This result is considered unusable.

A total of 22 PFAS field duplicates were collected from soil locations during the sampling period. Perfluorooctanesulfonic acid (PFOS) was the primary compound detected. There were detections in six pairs where RPDs were calculated, and five of those six field duplicate pairs met the project RPD precision goal of ≤ 50 indicating that good precision was met for PFAS in the soil media. Field duplicate results are summarized on Table 4. Field duplicate results within QPP project limits were reported for PFAS compounds with the following exceptions:

- The results for PFOS in sample LORNG_SB07004_8-10_05202022 and associated field duplicate LORNG_SB07004_8-10_05202022FD were qualified estimated due to a relative percent difference that exceeded project limits.

Recoveries within QSM and QPP project limits were reported for PFAS compounds in most MS/MSD analyses indicating accuracy goals were achieved in the soil media with the following exceptions:

- Results for PFOA, perfluoroheptanesulfonic acid (PFHpS), and 6:2-fluorotelomer sulfonate (6:2-FTS) in sample LORNG_SB07007_8-9_05202022 are qualified estimated due to low recoveries in the associated MS/MSD.

PFAS compound detections were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on EIS recovery. In accordance with QSM and QPP objectives EIS recovery limits are 50-150 percent. Target compound results and reporting limits associated with recoveries less than 50 percent are qualified estimated. Non-detect results associated with recoveries less than 20 percent are qualified rejected. Affected samples and associated qualified results are summarized in Table 3 with code RIS. Results qualified estimated (J/UJ) are considered usable as estimated values. Results qualified rejected (R) are considered unusable. The non-detect result for N-MeFOSA in sample LORNG_SB24004_2-3_06182022 was the only rejected PFAS result.

The laboratory was unable to acquire a second source standard of N-MeFOSA and perfluorononanesulfonic acid (PFNS) for use in the Initial Calibration Verification (ICV) in a subset of SDGs. Based on professional judgement, the LCS preparation was used to confirm the initial calibration (ICAL) and no qualifications were made.

Of the 8,675 individual PFAS results reported for the soil event, one result was qualified as rejected. This represents an overall data completeness of greater than 99% for the soil event.

Sample results for non-PFAS methods were qualified estimated (J) and reporting limits (UJ) in a subset of samples based on associated QC results outside limits for instrument calibration, LCS recovery and precision, MS/MSD recovery and precision, field duplicate precision, laboratory duplicate precision, surrogate recovery, internal standard response, and/or dual column confirmation differences, as well as holding time exceedances and/or reported sample concentrations greater than the instrument calibration range. Low concentration detections in some samples are qualified due to detections in associated blanks in accordance with validation guidelines. Affected samples and associated qualified results and validation action reason codes

are summarized in Table 3. Results are considered usable as estimated values. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Percent recoveries for vinyl acetate in the MS/MSD associated with sample LORNG_SB01016-8-10_06072022_K and its associated field duplicate LORNG_SB01016-8-10_06072022FDK were less than the rejection limit of 20. Vinyl acetate was not detected in the sample or field duplicate and reporting limits for vinyl acetate in sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK were qualified as rejected (R) and are considered unusable for project objectives.

Percent recoveries for 3,3-dichlorobenzidine, 4-chloroaniline, benzoic acid, and benzidine were less than the rejection limit of 10 percent in one or more LCS/LCSDs associated with the soil sample event. 3,3-Dichlorobenzidine, 4-chloroaniline, benzoic acid, and benzidine in associated samples were not detected and reporting limits were qualified as rejected (R) and are considered unusable for project objectives.

Field duplicate results for non-PFAS methods are summarized in Table 4. Field duplicate results within QPP project limits were reported for non-PFAS target analytes with the following exceptions:

- The results for acetone in sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK are considered estimated based on an RPD that exceeds project limits.
- The results for total organic carbon in sample LORNG_SB21001-0-1_06182022_C and associated field duplicate LORNG_SB21001-0-1_06182022FD_C are considered estimated based on an RPD that exceeds project limits.
- The results for calcium and lead in sample LORNG_SB21001-0-1_06182022_K and associated field duplicate LORNG_SB21001-0-1_06182022FD_K are considered estimated based on an RPD that exceeds project limits.

The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project objectives.

Of the 14,913 individual results reported for the soil event, 31 results were qualified as rejected. This represents an overall data completeness of greater than 99% for the soil event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
  Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 MS/MSD

FA95871 – The percent recoveries of PFOA, PFHpS, and 6:2FTS in the MS/MSD associated with sample LORNG_SB07007_8-9_05202022 were below the associated DoD acceptance limit (47 - 59). PFOA, PFHpS, and 6:2FTS were detected in sample LORNG_SB07007_8-9_05202022 and results were qualified as estimated (J).

2.1.2 Field Duplicates

FA95871 – The results for PFOS in sample LORNG_SB07004_8-10_05202022 and associated field duplicate LORNG_SB07004_8-10_05202022FD were qualified estimated (J) based on an RPD (92) that exceeds the project limit of 50.

2.1.3 Extracted Internal Standard Recovery

FA95871 – The extracted internal standard (EIS) percent recoveries associated with N-MeFOSAA in sample LORNG_SB08005_8-10_05192022 (48) and N-MeFOSA in samples LORNG_SB08003_0-1_05172022 (46), LORNG_SB08003_0-1_05172022FD (46), LORNG_SB08005_0-1_05192022 (49), LORNG_SB08004_0-1_05172022 (47), LORNG_SB07004_0-1_05202022 (48), LORNG_SB08002_0-1_05192022 (45), and LORNG_SB07007_8-9_05202022 (48) were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ).

FA95916 – The EIS percent recoveries associated with N-MeFOSA in samples LORNG_SB07011_0-1_05202022 (48) and LORNG_SB07012_0-1_05202022 (44) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples

LORNG_SB07011_0-1_05202022 and LORNG_SB07012_0-1_05202022 and reporting limits were qualified as estimated (UJ).

FA95934 – The EIS percent recovery associated with N-MeFOSA in sample LORNG_SB13002_0-1_05232022 (48) was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB13002_0-1_05232022 and the reporting limit was qualified as estimated (UJ).

FA96328 – The EIS percent recoveries associated with N-MeFOSA (31– 49) in a subset of samples were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in the affected samples and reporting limits were qualified as estimated (UJ).

FA96351 – The EIS percent recoveries associated with N-MeFOSA (36 – 49) in a subset of samples were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in the affected samples and reporting limits were qualified as estimated (UJ).

FA96351 – The EIS percent recoveries associated with N-MeFOSAA (40) and N-EtFOSAA (43) in sample LORNG_SB01013_0-1_06072022 were less than the lower QC acceptance limit of 50. N-MeFOSAA and N-EtFOSAA were not detected in sample LORNG_SB01013_0-1_06072022 reporting limits were qualified as estimated (UJ).

FA96551 – The EIS percent recoveries associated with PFOSA (45/36) and N-MeFOSA (39/29) in samples LORNG_SB18013_0-1_06142022 and LORNG_SB22003_0-1_06142022 were less than the lower QC acceptance limit of 50. PFOSA and N-MeFOSA were not detected in samples LORNG_SB18013_0-1_06142022 and LORNG_SB22003_0-1_06142022 and reporting limits were qualified as estimated (UJ).

FA96551 – The EIS percent recoveries associated with N-MEFOSA in samples LORNG_SB22001_7-8_06142022 (39) and LORNG_SB22002_6-7_06142022 (43) were less than the lower QC acceptance limit of 50. N-MEFOSA was not detected in samples LORNG_SB22001_7-8_06142022 and LORNG_SB22002_6-7_06142022 and reporting limits were qualified as estimated (UJ).

FA96616 – The EIS percent recovery associated with N-MeFOSA in sample LORNG_SB16006_8-10_06172022 (48) was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB16006_8-10_06172022 and the reporting limit was qualified as estimated (UJ).

FA96627 – The EIS percent recoveries associated with PFOSA and N-MeFOSA in samples LORNG_SB18008_0-1_06152022 (40/35), LORNG_SB18009_0-1_06152022 (40/34), LORNG_SB18010_0-1_06152022 (39/35), and LORNG_SB18010_8-10_06152022 (44/39) were less than the lower QC acceptance limit of 50. PFOSA and N-MeFOSA were not detected in samples LORNG_SB18008_0-1_06152022, LORNG_SB18009_0-1_06152022, LORNG_SB18010_0-1_06152022, and LORNG_SB18010_8-10_06152022 and reporting limits were qualified as estimated (UJ).

FA96627 – The EIS percent recovery associated with N-MeFOSA in sample LORNG_SB18011_0-1_06152022 (46) was less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in sample LORNG_SB18011_0-1_06152022 and the reporting limit was qualified as estimated (UJ).

FA96691 – The EIS percent recovery associated with MeFOSA in sample LORNG_SB24004_2-3_06182022 (19) was less than the rejection QC limit of 20. MeFOSA was not detected in the sample and the non-detect result was qualified as rejected (R).

FA96691 -- EIS percent recoveries (20 – 49) for a subset of parameters in the following samples were less than the lower QC acceptance limit of 50. Affected parameters were not detected in the associated samples and the reporting limits were qualified as estimated (UJ).

LORNG_SB20008_0-1_06182022
LORNG_SB20008_8-10_06182022
LORNG_SB21001_0-1_06182022
LORNG_SB24001_0-1_06182022
LORNG_SB24001_3-4_06182022
LORNG_SB24004_2-3_06182022
LORNG_SS18002_0-1_06192022
LORNG_SS18003_0-1_06192022
LORNG_SS18004_0-1_06192022
LORNG_SS18005_0-1_06192022
LORNG_SS18006_0-1_06192022
LORNG_SS18007_0-1_06192022
LORNG_SS18008_0-1_06192022
LORNG_SS18009_0-1_06192022

FA96726 – The EIS percent recovery associated with N-MeFOSA in samples LORNG_SS19011_0-1_062022 (48) and LORNG_SS13005_0-1_06202022 (46) were less than the lower QC acceptance limit of 50. N-MeFOSA was not detected in samples LORNG_SS19011_0-1_062022 and LORNG_SS13005_0-1_06202022 and the reporting limits were qualified as estimated (UJ).

FA96726 – The EIS percent recovery associated with N-MeFOSAA in sample LORNG_SB12006_8-10_062022 (48) was less than the lower QC acceptance limit of 50. N-MeFOSAA was not detected in sample LORNG_SB12006_8-10_062022 and the reporting limit was qualified as estimated (UJ).

2.1.4 Miscellaneous

The laboratory was unable to acquire a second source standard of N-MeFOSA and PFNS for use in the Initial Calibration Verification (ICV) in a subset of SDGs. Based on professional judgement, the LCS preparation was used to confirm the initial calibration (ICAL) and no qualifications were made.

2.1.5 Interlaboratory Split Samples

An interlaboratory split sample was collected in association with the following soil sample:

LORNG_SB01012_8-10_06062022

A summary of split sample results is presented on Table 6. Comparison criteria are established in QPP Appendix E. The majority of PFAS target compounds were not detected in the split sample pair. PFOS was detected and reported at similar concentrations by both laboratories in the split sample. All split sample results met comparison criteria, and the split sample results analyzed at Vista Laboratory are interpreted to confirm the accuracy of samples reported in the SGS data sets. .

2.2 VOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
  Field Duplicates
  Surrogates
  Internal Standards
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
  Miscellaneous

* QC criteria were met for this parameter.

2.2.1 Holding Times

SP3101 – The results for all target compounds in all field samples were qualified as estimated (UJ/J) due to being analyzed outside of the 14-day holding time for VOCs analysis.

2.2.2 QC Blanks

SP2461 – Chloroform was detected in the method blank (0.94 ug/kg) and trip blank LORNG_TB01_0519022 (1.0 ug/kg) associated with all field samples. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP2461 – Acetone was detected in the trip blank LORNG_TB01_0519022 (6.0 ug/kg) associated with sample LORNG_SB08001_0-1_05192022_K. The reported concentration of acetone in sample LORNG_SB08001_0-1_05192022_K was greater than the LOD and less than the LOQ, and the result was qualified as not-detected (U) at the sample result.

SP2461 – Toluene was detected in the trip blank LORNG_TB01_0519022 (18 ug/kg) associated with sample LORNG_SB08006_0-1_05192022_K. The detection of toluene in sample LORNG_SB08006_0-1_05192022_K was reported above the LOQ, and the result was qualified as not-detected (U) at the sample result.

SP2522 – Chloroform was detected in the method blank (0.94 ug/kg) and trip blank LORNG_TB02_0523022 (0.80 ug/kg) associated with samples LORNG_SB11002_0-1_05222022_K and LORNG_SB11002_8-10_05222022_K. The detections of chloroform in the associated samples were reported below the LOD and the results were qualified as not-detected (U) at the LOD.

SP2566 – Chloroform was detected in the method blank (0.83 ug/kg) and trip blank LORNG_TB03_0525022 (0.90 ug/kg) associated with samples LORNG_SB13008_0-1_05242022_K, LORNG_SB13017_0-1_05242022_K, and LORNG_SB13017_8-10_05242022_K. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP2692 – Chloroform was detected in the method blank (0.63 ug/kg) and trip blank LORNG_TB04_0531022 (0.67 ug/kg) associated with samples LORNG_SB06010_0-1_05312022_K and LORNG_SB06010_5-6_05312022_K. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP2721 – Chloroform was detected in the method blank (0.53 ug/kg) and trip blank LORNG_TB05_06012022 (0.57 ug/kg) associated with samples LORNG_SB13018_8-10_06012022_K and LORNG_SB13018_8-10_06012022FDK. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP2809 – Chloroform was detected in the method blank (0.64 ug/kg) and trip blank LORNG_TB06_06062022 (0.64 ug/kg) associated with samples LORNG_SB09006_0-1_06042022_K and LORNG_SB09006_8-10_06042022_K. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP2868 – Chloroform was detected in the method blank (0.59 ug/kg) and trip blank LORNG_TB09_06182022 (0.56 ug/kg) associated with all field samples. The detections of chloroform in the associated samples were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP3101 – Methylene chloride was detected in trip blank LORNG_TB08_06172022 (2,700 ug/kg) associated with samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022. The detections of methylene chloride in samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022 were reported above the LOQ and the results were qualified as not-detected (U) at the reported sample concentrations.

SP3101 – Chloroform was detected in the method blank (0.94 ug/kg) and the trip blank LORNG_TB08_06172022 (0.95 ug/kg) associated with samples LORNG_SB16006_0-1_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022. The detections of chloroform in samples LORNG_SB16006_0-1_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022 were reported below the LOD and the results were qualified as not-detected (U) at the LOD.

SP3119 – Chloroform was detected in the method blank (0.94 ug/kg) and trip blank LORNG_TB09_06182022 (0.97 ug/kg) associated with samples LORNG_SB21001_0-1_06182022, LORNG_SB21001_0-1_06182022FD, and LORNG_SB21001_2-3_06182022. The detections of chloroform in samples LORNG_SB21001_0-1_06182022, LORNG_SB21001_0-1_06182022FD, and LORNG_SB21001_2-3_06182022 were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP3119 – Acetone was detected in trip blank LORNG_TB09_06182022 (8.7 ug/kg) associated with sample LORNG_SB21001_0-1_06182022. The detection of acetone in sample LORNG_SB21001_0-1_06182022 was reported below the LOD and the result was qualified as not-detected (U) at the LOD.

2.2.3 MS/MSD

SP2868 – Percent recoveries for a subset of parameters in the MS/MSD associated with sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK recovered below the lower QC acceptance limit. The MS/MSD RPD for multiple parameters was outside of the acceptance criteria. Results and reporting limits for the subset of parameters in samples LORNG_SB01016-8-10_06072022_K and LORNG_SB01016-8-10_06072022FDK were qualified as estimated (UJ/J).

SP2868 – The percent recovery of vinyl acetate in the MS/MSD associated with sample LORNG_SB01016-8-10_06072022_K and its associated field duplicate LORNG_SB01016-8-10_06072022FDK recovered below the rejection limit of 20 percent. Vinyl acetate was not detected in sample LORNG_SB01016-8-10_06072022_K and its associated field duplicate LORNG_SB01016-8-10_06072022FDK and reporting limits were qualified as rejected (R).

2.2.4 Field Duplicates

SP2868 – The field duplicate RPD for acetone (60) exceeded project limits for sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK. The results for acetone in sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK were qualified as estimated (J).

2.2.5 Surrogates

SP2566 – The surrogate, dibromofluoromethane, associated with the undiluted analysis of sample LORNG_SB13008_8-10_05242022_K recovered below the lower acceptance limit. Multiple surrogates associated with the undiluted analysis of sample LORNG_SB13008_8-10_05242022_K recovered above the upper acceptance limit. The results for all target

compounds reported from the undiluted analysis of sample LORNG_SB13008_8-10_05242022_K were qualified as estimated (UJ/J).

2.2.6 Internal Standards

SP2566 – The internal standard, 1,4-difluorobenzene, associated with sample LORNG_SB13008_8-10_05242022_K recovered below the lower acceptance limit. The results for associated target compounds in sample LORNG_SB13008_8-10_05242022_K were qualified as estimated (UJ/J).

SP2809 – The internal standard, 1,4-dichlorobenzene-D4, associated with sample LORNG_SB09006_0-1_06042022_K recovered below the lower acceptance limit. The results for all target compounds in sample LORNG_SB09006_0-1_06042022_K were qualified as estimated (UJ/J).

2.2.7 Miscellaneous

SP2566 – Several target compounds in the undiluted analysis of sample LORNG_SB13008_8-10_05242022_K were reported with results that exceeded the upper calibration range. A methanol extraction of the sample was completed, and detections reported in the methanol extraction analysis that had exceeded the calibration range in the undiluted analysis were selected for final reporting. Results for VOCs with reported concentrations greater than the upper calibration range in the undiluted analysis, but that were not detected in the methanol extraction analysis, were selected from the initial analysis for final reporting. Results for compounds with concentrations greater than the upper calibration range were qualified estimated (J) in the final data set.

SP3101 – The results for methylene chloride in samples LORNG_SB16006_8-10_06172022 and LORNG_SB16011_0-1_06172022 exceeded the upper calibration range of the instrument and the results were qualified as estimated (J). Methylene chloride in sample LORNG_SB16006_8-10_06172022 and LORNG_SB16011_0-1_06172022 had previously been qualified as not detected (U) based on contamination in the associated trip blank and have final qualifiers of estimated (UJ).

2.3 SVOCs

Data were evaluated based on the following parameters:

Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
QC Blanks
* Instrument Performance/Tuning
LCS
* MS/MSD

* Field Duplicates
  Surrogates
* Internal Standards
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.3.1 Lab Report Narrative

SP2522 – As stated in the narrative, benzidine in the initial calibration verification associated with samples LORNG_SB11002_0-1_05222022_K and LORNG_SB11002_8-10_05222022_K had a recovery less than the rejection limit of 10 percent. Benzidine was not detected in the associated samples and reporting limits were qualified as rejected (R).

SP2566 – As stated in the narrative, benzidine in the initial calibration verification associated with all field samples had a recovery less than the rejection limit of 10 percent. The percent recovery for 4-chloroaniline was less than the lower control limit. Benzidine was not detected in the associated samples and reporting limits were qualified as rejected (R). 4-Chloroaniline was not detected in the associated samples and reporting limits were qualified as estimated (UJ).

SP2692 – As stated in the narrative, benzidine in the initial calibration verification associated with samples LORNG_SB06010_0-1_05312022_K and LORNG_SB06010_5-6_05312022_K had a recovery less than the rejection limit of 10 percent. Benzidine was not detected in the associated samples and reporting limits were qualified as rejected (R).

2.3.2 QC Blanks

SP2566 – Bis(2-ethylhexyl)phthalate was detected in the method blank (240 ug/kg) associated with samples LORNG_SB13008_8-10_05242022_K and LORNG_SB13017_0-1_05242022_K. The detections of bis(2-ethylhexyl)phthalate in samples LORNG_SB13008_8-10_05242022_K and LORNG_SB13017_0-1_05242022_K were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP3101 – Bis(2-ethylhexyl)phthalate was detected in the method blank (210 ug/kg) associated with samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, and LORNG_SB16011_0-1_06172022. The detections of bis(2-ethylhexyl)phthalate in samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, and LORNG_SB16011_0-1_06172022 were reported below the LOD and results were qualified as not-detected (U) at the LOD.

SP3101 – Bis(2-ethylhexyl)phthalate was detected in the method blank (250 ug/kg) associated with sample LORNG_SB16011_8-10_06172022. The detection of bis(2-ethylhexyl)phthalate in sample LORNG_SB16011_8-10_06172022 was reported below the LOD and the result was qualified as not-detected (U) at the LOD.

SP3119 – Bis(2-ethylhexyl)phthalate was detected in the method blank (170 ug/kg) associated with sample LORNG_SB21001_0-1_06182022. The detection of bis(2-ethylhexyl)phthalate in sample LORNG_SB21001_0-1_06182022 was reported below the LOD and the result was qualified as not-detected (U) at the LOD.

SP3119 – Bis(2-ethylhexyl)phthalate was detected in the method blank (240 ug/kg) associated with sample LORNG_SB21001_0-1_06182022FD. The detection of bis(2-ethylhexyl)phthalate in sample LORNG_SB21001_0-1_06182022FD was reported below the LOD and the result was qualified as not-detected (U) at the LOD.

2.3.3 LCS

SP2461 – The percent recovery of benzoic acid in the LCS associated with samples LORNG_SB08001_0-1_05192022_K, LORNG_SB08001_8-10_05192022_K, LORNG_SB08006_0-1_05192022_K, and LORNG_SB08006_8-10_05192022_K was less than the rejection limit of 10 percent. Benzoic acid was not detected in samples LORNG_SB08001_0-1_05192022_K, LORNG_SB08001_8-10_05192022_K, LORNG_SB08006_0-1_05192022_K, and LORNG_SB08006_8-10_05192022_K and the reporting limits were qualified as rejected (R).

SP2522 – The percent recoveries of 2,4-dimethylphenol, 4-chloroaniline and benzidine in the LCS associated with samples LORNG_SB11002_0-1_05222022_K and LORNG_SB11002_8-10_05222022_K were less than the lower QC acceptance limit. Benzidine recovered below the rejection limit of 10 percent. The RPDs between LCS/LCSD results for 2,4-dimethylphenol and 4-chloroaniline also exceeded the LCS/LCSD RPD limit. 2,4-Dimethylphenol and 4-chloroaniline were not detected in the associated samples and the reporting limits were qualified as estimated (UJ). Benzidine was not detected in the associated samples reporting limits were qualified as rejected (R).

SP2566 – The percent recoveries of 4-chloroaniline and benzidine in the LCS associated with all field samples were less than the lower QC acceptance limit. Benzidine recovered below the rejection limit of 10 percent. 4-Chloroaniline was not detected in the associated samples and the reporting limits were qualified as estimated (UJ). Benzidine was not detected in the associated samples reporting limits were qualified as rejected (R).

SP2692 – The percent recoveries of 4-chloroaniline and benzidine in the LCS associated with samples LORNG_SB06010_0-1_05312022_K and LORNG_SB06010_5-6_05312022_K were less than the lower QC acceptance limit. Benzidine recovered below the rejection limit of 10 percent. The RPD between LCS/LCSD results for 4-chloroaniline also exceeded the LCS/LCSD RPD limit. 4-Chloroaniline was not detected in samples LORNG_SB06010_5-6_05312022_K and the reporting limits were qualified as estimated (UJ). Benzidine was not detected in samples LORNG_SB06010_0-1_05312022_K the reporting limits were qualified as rejected (R).

SP2721 – The percent recoveries of 4-chloroaniline and benzidine in the LCS associated with samples LORNG_SB13018_0-1_06012022_K and LORNG_SB13018_8-10_06012022_K were less than the lower QC acceptance limit. Benzidine recovered below the rejection limit of 10 percent. 4-Chloroaniline was not detected in samples LORNG_SB13018_0-1_06012022_K and

LORNG_SB13018_8-10_06012022_K and the reporting limits were qualified as estimated (UJ). Benzidine was not detected in samples LORNG_SB13018_0-1_06012022_K and LORNG_SB13018_8-10_06012022_K and the reporting limits were qualified as rejected (R).

SP2809 – The percent recovery of benzidine in the LCS associated with samples LORNG_SB09006_0-1_06042022_K and LORNG_SB09006_8-10_06042022_K was less than the rejection limit of 10 percent. The LCS/LCSD RPD for benzidine (200) was also outside of QC limits. Benzidine was not detected in samples LORNG_SB09006_0-1_06042022_K and LORNG_SB09006_8-10_06042022_K and the reporting limits were qualified as rejected (R).

SP2868 – The percent recovery of benzidine in the LCS associated with all field samples was less than the rejection limit of 10 percent. Benzidine was not detected in the associated samples and the reporting limits were qualified as rejected (R).

SP3119 – The percent recoveries of 4-chloroaniline and hexachlorocyclopentadiene in the LCS associated with samples LORNG_SB21001_0-1_06182022 and LORNG_SB21001_2-3_06182022 were less than the lower QC acceptance limit. Benzidine recovered below the rejection limit of 10 percent. The LCS/LCSD RPD exceeded project limits for 4-chloroaniline. 4-Chloroaniline and hexachlorocyclopentadiene were not detected in samples LORNG_SB21001_0-1_06182022 and LORNG_SB21001_2-3_06182022 and the reporting limits were qualified as estimated (UJ). Benzidine was not detected in samples SB21001_0-1_06182022 and LORNG_SB21001_2-3_06182022 and the reporting limits were qualified as rejected (R).

SP3119 – The percent recoveries of 3-nitroaniline and hexachlorocyclopentadiene in the LCS associated with sample LORNG_SB21001_0-1_06182022FD were less than the lower QC acceptance limit. 3,3-Dichlorobenzidine, 4-chloroaniline, and benzidine recovered below the rejection limit of 10 percent. The LCS/LCSD RPD exceeded project limits for 4-chloroaniline and 3-nitroaniline. 3-Nitroaniline and hexachlorocyclopentadiene were not detected in sample LORNG_SB21001_0-1_06182022FD and the reporting limits were qualified as estimated (UJ). 3,3-Dichlorobenzidine, 4-chloroaniline, and benzidine were not detected in sample LORNG_SB21001_0-1_06182022FD and the reporting limits were qualified as rejected (R).

2.3.4 Surrogates

SP2868 – The percent recoveries of several surrogates associated with sample LORNG_SB01016-8-10_06072022FDK were outside of QC limits (32 – 35), indicating low bias. The results for all target compounds in sample LORNG_SB01016-8-10_06072022FDK were non-detect and reporting limits were qualified as estimated (UJ). The reporting limit for benzidine was previously qualified rejected (R) based on LCS percent recovery less than 10.

SP2809 – The percent recoveries of several surrogates associated with sample LORNG_SB09006_8-10_06042022_K were outside of QC limits (14 – 37), indicating low bias. The results for all target compounds in sample LORNG_SB09006_8-10_06042022_K were non-detect and reporting limits were qualified as estimated (UJ). The reporting limit for benzidine was previously qualified rejected (R) based on LCS percent recovery less than 10.

2.4 SVOCs - SIM

Data were evaluated based on the following parameters:

Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
QC Blanks
* Instrument Performance/Tuning
LCS
MS/MSD
* Field Duplicates
* Surrogates/ Internal Standards
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.4.1 Lab Report Narrative

SP2461 – As stated in the narrative, the percent recoveries of pyrene and chrysene in the continuing calibration verification associated with sample LORNG_SB08001_8-10_05192022_K were greater than the upper QC limit. Pyrene and chrysene were detected in sample LORNG_SB08001_8-10_05192022_K and results were qualified as estimated (J).

SP2461 – As stated in the narrative, the percent recoveries of dibenz(a,h)anthracene and indeno(1,2,3-c,d)pyrene in the continuing calibration verification associated a subset of samples were less than the lower QC limit. Positive and non-detect results for dibenz(a,h)anthracene and indeno(1,2,3-c,d)pyrene in the subset of samples were qualified as estimated (UJ/J).

2.4.2 QC blanks

SP2522 – Benzo(b)fluoranthene was detected in the method blank (3.9 ug/kg) associated with sample LORNG_SB11002_8-10_05222022_K. The reported detection of benzo(b)fluoranthene in sample LORNG_SB11002_8-10_05222022_K was less than the LOD and the result was qualified as not-detected (U) at the LOD.

2.4.3 LCS

SP2522 – The percent recoveries of benzo(a)pyrene and benzo(k)fluoranthene in the LCS associated with samples LORNG_SB11002_0-1_05222022_K and LORNG_SB11002_8-10_05222022_K were less than the lower QC acceptance limit. Benzo(a)pyrene and benzo(k)fluoranthene were not detected in sample and LORNG_SB11002_8-10_05222022_K and the reporting limits were qualified as estimated (UJ). Benzo(a)pyrene and

benzo(k)fluoranthene were detected in sample LORNG_SB11002_0-1_05222022_K and results were qualified as estimated (J).

SP2566 – The LCS/LCSD RPD associated with samples LORNG_SB13008_0-1_05242022_K and LORNG_SB13017_0-1_05242022_K exceeded project limits for benzo(k)fluoranthene. Benzo(k)fluoranthene was detected in samples LORNG_SB13008_0-1_05242022_K and LORNG_SB13017_0-1_05242022_K and the results were qualified as estimated (J).

SP2692 – The LCS/LCSD RPD associated with sample LORNG_SB06010_0-1_05312022_K exceeded project limits for benzo(k)fluoranthene. Benzo(k)fluoranthene was detected in sample LORNG_SB06010_0-1_05312022_K and the result was qualified as estimated (J).

SP2809 – The percent recovery of 1,4-dioxane in the LCS associated with samples LORNG_SB09006_0-1_06042022_K and LORNG_SB09006_8-10_06042022_K was less than the lower QC acceptance limit. 1,4-dioxane was not detected in samples LORNG_SB09006_0-1_06042022_K and LORNG_SB09006_8-10_06042022_K and the reporting limits were qualified as estimated (UJ).

SP2868 – The percent recovery of 1,4-dioxane in the LCS associated with samples LORNG_SB01016-0-1_06072022_K, LORNG_SB01016-8-10_06072022_K, and LORNG_SB01016-8-10_06072022FDK was less than the lower QC acceptance limit. 1,4-dioxane was not detected in samples LORNG_SB01016-0-1_06072022_K, LORNG_SB01016-8-10_06072022_K, and LORNG_SB01016-8-10_06072022FDK and the reporting limits were qualified as estimated (UJ).

SP3101 – The percent recoveries of benzo(k)fluoranthene and chrysene in the LCS associated with samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022 were less than the lower QC acceptance limit. The LCS/LCSD RPDs also exceeded project limits for benzo(k)fluoranthene and chrysene. Positive and non-detect results for benzo(k)fluoranthene and chrysene in samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022 were qualified as estimated (UJ/J).

SP3101 – The percent recovery of 1,4-dioxane in the LCS associated with samples LORNG_SB16011_0-1_06172022 and LORNG_SB16011_8-10_06172022 was less than the lower QC acceptance limit. The LCS/LCSD RPD also exceeded project limit for 1,4-dioxane. 1,4-dioxane was not detected in samples LORNG_SB16011_0-1_06172022 and LORNG_SB16011_8-10_06172022 and the reporting limits were qualified as estimated (UJ).

SP3101 – The LCS/LCSD RPDs exceeded project limits for multiple target compounds associated with samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022. The detections in samples LORNG_SB16006_0-1_06172022, LORNG_SB16006_8-10_06172022, LORNG_SB16011_0-1_06172022, and LORNG_SB16011_8-10_06172022 were qualified as estimated (J).

2.4.4 MS/MSD

SP2868 – Percent recoveries of 1,4-dioxane, anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and chrysene in the MS/MSD associated with sample LORNG_SB01016-8-10_06072022_K and associated field duplicate LORNG_SB01016-8-10_06072022FDK were less than the lower QC acceptance limit. 1,4-Dioxane, anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and chrysene were not detected in the samples and the reporting limits were qualified as estimated (UJ).

2.5 Pesticides

Data were evaluated based on the following parameters:

Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
Surrogates/ Internal Standards
Dual-column RPD
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.5.1. Lab Report Narrative

SP2461 – As stated in the narrative, the percent recoveries of methoxyclor and 4,4'-DDT in the continuing calibration verification associated with samples LORNG_SB08006_0-1_05192022_K and LORNG_SB08006_8-10_05192022_K were less than the lower QC limit. Positive and non-detect results for methoxyclor and 4,4'-DDT samples LORNG_SB08006_0-1_05192022_K and LORNG_SB08006_8-10_05192022_K were qualified as estimated (UJ/J).

2.5.2 Surrogates

SP2461 – Percent recovery of the surrogate, tetrachloro-m-xylene, associated with sample LORNG_SB08006_8-10_05192022_K (38) was less than the lower control limit, indicating low bias. The reporting limits for sample LORNG_SB08006_8-10_05192022_K were qualified as estimated (UJ).

SP3101 – Percent recovery of the surrogate, tetrachloro-m-xylene, associated with sample LORNG_SB16011_8-10_06172022 (24) was less than the lower control limit, indicating low bias. The reporting limits for sample LORNG_SB16011_8-10_06172022 were qualified as estimated (UJ).

SP3119 – Percent recovery of the surrogate, tetrachloro-m-xylene, associated with sample LORNG_SB21001_2-3_06182022 (41) was less than the lower control limit, indicating low bias. The reporting limits for sample LORNG_SB21001_2-3_06182022 were qualified as estimated (UJ).

2.5.3 Dual-column RPD

SP3119 –The dual column RPDs exceeded QC limits for 4,4'-DDT and endrin ketone in samples LORNG_SB21001_0-1_06182022 (140/134) and LORNG_SB21001_0-1_06182022FD (139/134). The results for 4,4'-DDT and endrin ketone in samples LORNG_SB21001_0-1_06182022 and LORNG_SB21001_0-1_06182022FD were qualified as estimated (J).

2.6 PCBs

Data were evaluated based on the following parameters:

Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates

Surrogates
* Internal Standards
* Dual-column RPD
* Reporting Limits
* Electronic Data Verification
* Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.6.1 Lab Report Narrative

SP2461 – As stated in the narrative, the percent recovery of Aroclor-1260 in the continuing calibration verification standard associated with samples LORNG_SB08006_0-1_05192022_K and LORNG_SB08006_8-10_05192022_K was less than the lower QC limit. Based on professional judgment the results for Aroclor-1260, Aroclor-1254, Aroclor-1262, and Aroclor-1268 were non-

detect in samples LORNG_SB08006_0-1_05192022_K and LORNG_SB08006_8-10_05192022_K and reporting limits were qualified as estimated (UJ).

2.6.2 Surrogates

SP2461 – Percent recovery of the surrogate tetrachloro-m-xylene (33) associated with sample LORNG_SB08006_8-10_05192022_K was less than the lower control limits, indicating low bias. All analytes were non-detect in sample LORNG_SB08006_8-10_05192022_K and the reporting limits were qualified as estimated (UJ).

SP3101 – Percent recoveries of surrogates tetrachloro-m-xylene (33) and decachlorobiphenyl (55/31) in sample LORNG_SB16011_8-10_06172022 were less than the lower control limits, indicating low bias. All analytes were non-detect in sample LORNG_SB16011_8-10_06172022 and the reporting limits were qualified as estimated (UJ).

2.7 Metals

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* LCS
  MS/MSD
  Field Duplicates
* Interference Check Standard
* Reporting Limits
* Electronic Data Verification
  Miscellaneous

* QC criteria were met for this parameter.

2.7.1 QC Blanks

SP2522 – Potassium was detected in the method blank (138 mg/kg) associated with sample LORNG_SB11002_8-10_05222022_K. The detection of potassium in sample LORNG_SB11002_8-10_05222022_K was reported above the LOQ but less than 10x the blank result and the sample result was qualified as estimated (J).

SP2566 – Sodium was detected a in the method blank (6.5 J mg/kg) associated with samples LORNG_SB13008_0-1_05242022_K, LORNG_SB13008_8-10_05242022_K, LORNG_SB13017_0-1_05242022_K, and LORNG_SB13017_8-10_05242022_K. Detections of sodium in the associated samples were reported above the LOQ and the results were qualified as not-detected (U) at the reported sample results.

2.7.2 MS/MSD

SP2461 – The percent recoveries of antimony, chromium, copper, lead, nickel, potassium, and zinc in the MS/MSD associated with sample LORNG_SB08001_0-1_05192022_K were less than the lower QC acceptance limit. The percent recoveries of arsenic, lead, and potassium in the MSD were greater than the upper control limit. The MS/MSD RPDs for multiple target analytes were outside of project limits. The results for the associated target compounds in sample LORNG_SB08001_0-1_05192022_K were qualified as estimated (UJ/J).

SP2566 – The percent recoveries of chromium, copper, and vanadium in the MS/MSD associated with sample LORNG_SB13008_0-1_05242022_K were greater than the upper QC acceptance limit. The MS/MSD RPDs for copper and vanadium were outside of project limits. Chromium, copper, and vanadium was detected in sample LORNG_SB13008_0-1_05242022_K and the result was qualified as estimated (J).

SP2566 – Percent recoveries for a subset of target compounds in the MS/MSD associated with sample LORNG_SB13008_0-1_05242022_K were less than the lower QC acceptance limit. The MS/MSD RPDs for arsenic, copper, and nickel were outside of project limits. Positive and non-detect results for affected analytes in sample LORNG_SB13008_0-1_05242022_K were qualified as estimated (J/UJ).

SP2809 – The percent recovery of mercury in the MS/MSD associated with sample LORNG_SB09006_0-1_06042022_K was greater than the upper QC acceptance limit. The MS/MSD RPD for mercury was also outside of project limits. Mercury was detected in sample LORNG_SB09006_0-1_06042022_K and the result was qualified as estimated (J).

SP2868 – The percent recoveries of antimony and lead in the MS/MSD associated with sample LORNG_SB01016-0-1_06072022_K were less than the lower QC acceptance limit. The results for antimony and lead in sample LORNG_SB01016-0-1_06072022_K were qualified as estimated (UJ/J).

SP2868 – The percent recoveries of zinc and potassium in the MS/MSD associated with sample LORNG_SB01016-0-1_06072022_K were greater than the upper QC acceptance limit. Zinc and potassium were detected in sample LORNG_SB01016-0-1_06072022_K and results were qualified as estimated (J).

2.7.3 Field Duplicates

SP3119 – The results for calcium and lead in samples LORNG_SB21001_0-1_06182022 and LORNG_SB21001_0-1_06182022FD were qualified as estimated (J) due to field duplicate RPDs that are outside of project limits (63/86).

2.7.4 Miscellaneous

SP2461 – Continuing calibration percent recoveries for arsenic (111) and cobalt (112) associated with a subset of samples were greater than the upper control limit. The detections for arsenic and cobalt in the associated samples were qualified as estimated (J).

2.8 General Chemistry

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* LCS
* MS/MSD
  Field Duplicates
  Laboratory Duplicates
* Reporting Limits
* Electronic Data Verification

* QC criteria were met for this parameter.

2.8.1 Field Duplicates

170363 – The results for total organic carbon in sample LORNG_SB21001_0-1_06182022_C and its associated field duplicate LORNG_SB21001_0-1_06182022FD_C were qualified as estimated (J) due to a field duplicate RPD (109) greater than the project limit.

2.8.2 Laboratory Duplicates

169966 – The result for total organic carbon in sample LORNG_SB11002_0-1_052222_C was qualified as estimated (J) due to a laboratory duplicate RPD (39) greater than project limits.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

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Data Validation: Amber Jones



October 7, 2022

Reviewed by: Julie Ricardi



March 8, 2023

Table 1 -- Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	VOCs	SVOCs by SIM	SVOCs	PCBs	Pesticides	Metals		WetChem			Perchlorate
						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
169966	SB11002	LORNG_SB11002_0-1_052222_C	1150731	5/22/2022	SO	N											1	
		LORNG_SB11002_8-10_052222_C	1150735	5/22/2022	SO	N											1	
169967	SB13017	LORNG_SB13017_0-1_052422_C	1150736	5/24/2022	SO	N											1	
		LORNG_SB13017_8-10_052422_C	1150737	5/24/2022	SO	N											1	
170145	SB09006	LORNG_SB09006_0-1_06042022_CT	1153455	6/4/2022	SO	N											1	
		LORNG_SB09006_8-10_06042022_CT	1153458	6/4/2022	SO	N											1	
170363	SB21001	LORNG_SB21001_0-1_06182022_C	1157246	6/18/2022	SO	N											1	
		LORNG_SB21001_0-1_06182022FD_C	1157248	6/18/2022	SO	FD											1	
		LORNG_SB21001_2-3_06182022_C	1157249	6/18/2022	SO	N											1	
170364	SB16011	LORNG_SB16011_0-1_06172022_C	1157250	6/17/2022	SO	N											1	
		LORNG_SB16011_8-10_06172022_C	1157251	6/17/2022	SO	N											1	
200-3792	SB01016	LORNG_SB01016-0-1_06072022_E	200-63792-1	6/7/2022	SO	N										1		1
		LORNG_SB01016-8-10_06072022_E	200-63792-2	6/7/2022	SO	N										1		1
		LORNG_SB01016-8-10_06072022FDE	200-63792-3FD	6/7/2022	SO	FD										1		1
200-63532	SB08006	LORNG_SB08006_0-1_05192022_E	200-63532-1	5/19/2022	SO	N										1		1
		LORNG_SB08006_8-10_05192022_E	200-63532-2	5/19/2022	SO	N										1		1
200-63719	SB06010	LORNG_SB06010_0-1_05312022_E	200-63719-1	5/31/2022	SO	N										1		1
		LORNG_SB06010_5-6_05312022_E	200-63719-2	5/31/2022	SO	N										1		1
200-63720	SB09006	LORNG_SB09006_0-1_06042022_E	200-63720-1	6/4/2022	SO	N										1		1
		LORNG_SB09006_8-10_06042022_E	200-63720-2	6/4/2022	SO	N										1		1
200-63883	SB21001	LORNG_SB21001_0-1_06182022_E	200-63883-1	6/18/2022	SO	N										1		1
		LORNG_SB21001_0-1_06182022FD_E	200-63883-2FD	6/18/2022	SO	FD										1		1
		LORNG_SB21001_2-3_06182022_E	200-63883-3	6/18/2022	SO	N										1		1
200-63885	SB16011	LORNG_SB16011_0-1_06172022_E	200-63885-1	6/17/2022	SO	N										1		1
		LORNG_SB16011_8-10_06172022_E	200-63885-2	6/17/2022	SO	N										1		1
FA95871	FIELDQC	LORNG_EB100_05172022	FA95871-1	5/17/2022	WQ	EB	25											
		LORNG_EB101_05172022	FA95871-2	5/17/2022	WQ	EB	25											
		LORNG_EB102_05172022	FA95871-3	5/17/2022	WQ	EB	25											
		LORNG_EB103_05172022	FA95871-4	5/17/2022	WQ	EB	25											
		LORNG_EB104_05192022	FA95871-13	5/19/2022	WQ	EB	25											
		LORNG_EB105_05192022	FA95871-14	5/19/2022	WQ	EB	25											
	SB07004	LORNG_SB07004_0-1_05202022	FA95871-15	5/20/2022	SO	N	25											
		LORNG_SB07004_8-10_05202022	FA95871-16	5/20/2022	SO	N	25											
		LORNG_SB07004_8-10_05202022FD	FA95871-17	5/20/2022	SO	FD	25											
	SB07005	LORNG_SB07005_0-1_05202022	FA95871-18	5/20/2022	SO	N	25											
		LORNG_SB07005_8-10_05202022	FA95871-19	5/20/2022	SO	N	25											
	SB07006	LORNG_SB07006_0-1_05202022	FA95871-25	5/20/2022	SO	N	25											
		LORNG_SB07006_8-10_05202022	FA95871-26	5/20/2022	SO	N	25											
	SB07007	LORNG_SB07007_0-1_05202022	FA95871-27	5/20/2022	SO	N	25											
		LORNG_SB07007_8-9_05202022	FA95871-28	5/20/2022	SO	N	25											
	SB08001	LORNG_SB08001_0-1_05192022	FA95871-20	5/19/2022	SO	N	25											
		LORNG_SB08001_8-10_05192022	FA95871-21	5/19/2022	SO	N	25											
	SB08002	LORNG_SB08002_0-1_05192022	FA95871-22	5/19/2022	SO	N	25											
		LORNG_SB08002_8-10_05192022	FA95871-23	5/19/2022	SO	N	25											
	SB08003	LORNG_SB08003_0-1_05172022	FA95871-5	5/17/2022	SO	N	25											
		LORNG_SB08003_0-1_05172022FD	FA95871-6	5/17/2022	SO	FD	25											
		LORNG_SB08003_8-9_05172022	FA95871-7	5/17/2022	SO	N	25											

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/8/2023

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Former Loring Air Force Base, Limestone, Maine

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						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA95871	SB08004	LORNG_SB08004_0-1_05172022	FA95871-8	5/17/2022	SO	N	25											
		LORNG_SB08004_8-10_05172022	FA95871-9	5/17/2022	SO	N	25											
	SB08005	LORNG_SB08005_0-1_05192022	FA95871-10	5/19/2022	SO	N	25											
		LORNG_SB08005_8-10_05192022	FA95871-11	5/19/2022	SO	N	25											
	SB08006	LORNG_SB08006_0-1_05192022	FA95871-12	5/19/2022	SO	N	25											
		LORNG_SB08006_8-10_05192022	FA95871-24	5/19/2022	SO	N	25											
FA95916	FIELDQC	LORNG_EB106_05202022	FA95916-13	5/20/2022	WQ	EB	25											
		LORNG_EB107_05212022	FA95916-14	5/21/2022	WQ	EB	25											
		LORNG_EB108_05212022	FA95916-15	5/21/2022	WQ	EB	25											
		LORNG_EB109_05222022	FA95916-25	5/22/2022	WQ	EB	25											
	SB07008	LORNG_SB07008_0-1_05202022	FA95916-1	5/20/2022	SO	N	25											
		LORNG_SB07008_8-10_05202022	FA95916-2	5/20/2022	SO	N	25											
	SB07009	LORNG_SB07009_0-1_05202022	FA95916-3	5/20/2022	SO	N	25											
		LORNG_SB07009_8-9_05202022	FA95916-4	5/20/2022	SO	N	25											
	SB07010	LORNG_SB07010_0-1_05202022	FA95916-5	5/20/2022	SO	N	25											
		LORNG_SB07010_8-10_05202022	FA95916-6	5/20/2022	SO	N	25											
	SB07011	LORNG_SB07011_0-1_05202022	FA95916-7	5/20/2022	SO	N	25											
		LORNG_SB07011_8-10_05202022	FA95916-8	5/20/2022	SO	N	25											
	SB07012	LORNG_SB07012_0-1_05202022	FA95916-9	5/20/2022	SO	N	25											
		LORNG_SB07012_8-10_05202022	FA95916-10	5/20/2022	SO	N	25											
		LORNG_SB07012_8-10_05202022FD	FA95916-11	5/20/2022	SO	FD	25											
	SB07013	LORNG_SB07013_0-1_05202022	FA95916-12	5/20/2022	SO	N	25											
		LORNG_SB07013_6-7_05202022	FA95916-16	5/20/2022	SO	N	25											
	SB07014	LORNG_SB07014_0-1_05212022	FA95916-17	5/21/2022	SO	N	25											
		LORNG_SB07014_8-10_05212022	FA95916-18	5/21/2022	SO	N	25											
	SB10005	LORNG_SB10005_0-1_05212022	FA95916-19	5/21/2022	SO	N	25											
		LORNG_SB10005_8-10_05212022	FA95916-20	5/21/2022	SO	N	25											
	SB10006	LORNG_SB10006_0-1_05222022	FA95916-26	5/22/2022	SO	N	25											
		LORNG_SB10006_8-10_05222022	FA95916-27	5/22/2022	SO	N	25											
		LORNG_SB10006_8-10_05222022FD	FA95916-37	5/22/2022	SO	FD	25											
	SB10007	LORNG_SB10007_0-1_05222022	FA95916-28	5/22/2022	SO	N	25											
		LORNG_SB10007_8-10_05222022	FA95916-29	5/22/2022	SO	N	25											
	SB10008	LORNG_SB10008_0-1_05212022	FA95916-21	5/21/2022	SO	N	25											
		LORNG_SB10008_8-9_05212022	FA95916-22	5/21/2022	SO	N	25											
	SB10009	LORNG_SB10009_0-1_05212022	FA95916-23	5/21/2022	SO	N	25											
		LORNG_SB10009_8-10_05212022	FA95916-24	5/21/2022	SO	N	25											
	SB11001	LORNG_SB11001_0-1_05222022	FA95916-30	5/22/2022	SO	N	25											
		LORNG_SB11001_8-10_05222022	FA95916-31	5/22/2022	SO	N	25											
	SB11002	LORNG_SB11002_0-1_05222022	FA95916-32	5/22/2022	SO	N	25											
		LORNG_SB11002_8-10_05222022	FA95916-33	5/22/2022	SO	N	25											
		LORNG_SB11002_8-10_05222022FD	FA95916-34	5/22/2022	SO	FD	25											
	SB11003	LORNG_SB11003_0-1_05222022	FA95916-35	5/22/2022	SO	N	25											
		LORNG_SB11003_8-10_05222022	FA95916-36	5/22/2022	SO	N	25											

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						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA95934	FIELDQC	LORNG_EB110_05232022	FA95934-1	5/23/2022	WQ	EB	25											
		LORNG_EB111_05232022	FA95934-12	5/23/2022	WQ	EB	25											
	SB13001	LORNG_SB13001_0-1_05232022	FA95934-2	5/23/2022	SO	N	25											
		LORNG_SB13001_6-7_05232022	FA95934-3	5/23/2022	SO	N	25											
	SB13002	LORNG_SB13002_0-1_05232022	FA95934-13	5/23/2022	SO	N	25											
		LORNG_SB13002_0-1_05232022FD	FA95934-14	5/23/2022	SO	FD	25											
		LORNG_SB13002_9-10_05232022	FA95934-15	5/23/2022	SO	N	25											
	SB13005	LORNG_SB13005_0-1_05232022	FA95934-4	5/23/2022	SO	N	25											
	SB13009	LORNG_SB13009_0-1_05232022	FA95934-5	5/23/2022	SO	N	25											
		LORNG_SB13009_8-10_05232022	FA95934-6	5/23/2022	SO	N	25											
	SB13014	LORNG_SB13014_0-1_05232022	FA95934-7	5/23/2022	SO	N	25											
		LORNG_SB13014_0-1_05232022FD	FA95934-8	5/23/2022	SO	FD	25											
		LORNG_SB13014_8-10_05232022	FA95934-9	5/23/2022	SO	N	25											
	SB13015	LORNG_SB13015_0-1_05232022	FA95934-10	5/23/2022	SO	N	25											
		LORNG_SB13015_8-10_05232022	FA95934-11	5/23/2022	SO	N	25											
FA95977	FIELDQC	LORNG_EB112_05232022	FA95977-1	5/24/2022	WQ	EB	25											
	SB13003	LORNG_SB13003_0-1_05242022	FA95977-2	5/24/2022	SO	N	25											
		LORNG_SB13003_8-10_05242022	FA95977-3	5/24/2022	SO	N	25											
	SB13004	LORNG_SB13004_0-1_05242022	FA95977-4	5/24/2022	SO	N	25											
		LORNG_SB13004_8-10_05242022	FA95977-5	5/24/2022	SO	N	25											
	SB13008	LORNG_SB13008_0-1_05242022	FA95977-6	5/24/2022	SO	N	25											
		LORNG_SB13008_8-10_05242022	FA95977-7	5/24/2022	SO	N	25											
	SB13012	LORNG_SB13012_0-1_05242022	FA95977-8	5/24/2022	SO	N	25											
		LORNG_SB13012_8-10_05242022	FA95977-11	5/24/2022	SO	N	25											
	SB13017	LORNG_SB13017_0-1_05242022	FA95977-12	5/24/2022	SO	N	25											
		LORNG_SB13017_8-10_05242022	FA95977-13	5/24/2022	SO	N	25											
	SB13023	LORNG_SB13023_0-1_05242022	FA95977-9	5/24/2022	SO	N	25											
		LORNG_SB13023_6-7_05242022	FA95977-10	5/24/2022	SO	N	25											
FA96109	FIELDQC	LORNG_EB113_05312022	FA96109-1	5/31/2022	WQ	EB	25											
		LORNG_EB114_06012022	FA96109-2	6/1/2022	WQ	EB	25											
	SB06010	LORNG_SB06010_0-1_05312022	FA96109-16	5/31/2022	SO	N	25											
		LORNG_SB06010_5-6_05312022	FA96109-17	5/31/2022	SO	N	25											
	SB13006	LORNG_SB13006_0-1_06012022	FA96109-3	6/1/2022	SO	N	25											
		LORNG_SB13006_8-10_06012022	FA96109-4	6/1/2022	SO	N	25											
	SB13007	LORNG_SB13007_0-1_06012022	FA96109-5	6/1/2022	SO	N	25											
		LORNG_SB13007_8-10_06012022	FA96109-6	6/1/2022	SO	N	25											
	SB13013	LORNG_SB13013_0-1_06012022	FA96109-7	6/1/2022	SO	N	25											
		LORNG_SB13013_5-6_06012022	FA96109-8	6/1/2022	SO	N	25											
	SB13018	LORNG_SB13018_0-1_06012022	FA96109-9	6/1/2022	SO	N	25											
		LORNG_SB13018_8-10_06012022	FA96109-10	6/1/2022	SO	N	25											
	SB13019	LORNG_SB13019_0-1_06012022	FA96109-12	6/1/2022	SO	N	25											
		LORNG_SB13019_8-10_06012022	FA96109-13	6/1/2022	SO	N	25											
		LORNG_SB13019_8-10_06012022FD	FA96109-14	6/1/2022	SO	FD	25											
	SB13020	LORNG_SB13020_0-1_06012022	FA96109-11	6/1/2022	SO	N	25											
		LORNG_SB13020_8-10_06012022	FA96109-15	6/1/2022	SO	N	25											

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						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA96203	FIELDQC	LORNG_EB115_06012022	FA96203-1	6/1/2022	WQ	EB	25											
		LORNG_EB116_06022022	FA96203-13	6/2/2022	WQ	EB	25											
	SB12008	LORNG_SB12008_0-1_06022022	FA96203-2	6/2/2022	SO	N	25											
		LORNG_SB12008_8-10_06022022	FA96203-14	6/2/2022	SO	N	25											
		LORNG_SB12008_8-10_06022022FD	FA96203-15	6/2/2022	SO	FD	25											
	SB13010	LORNG_SB13010_0-1_06022022	FA96203-3	6/2/2022	SO	N	25											
		LORNG_SB13010_8-10_06022022	FA96203-4	6/2/2022	SO	N	25											
	SB13011	LORNG_SB13011_0-1_06012022	FA96203-5	6/1/2022	SO	N	25											
		LORNG_SB13011_8-10_06012022	FA96203-6	6/1/2022	SO	N	25											
	SB13016	LORNG_SB13016_0-1_06022022	FA96203-7	6/2/2022	SO	N	25											
		LORNG_SB13016_8-10_06022022	FA96203-8	6/2/2022	SO	N	25											
	SB14004	LORNG_SB14004_0-1_06022022	FA96203-9	6/2/2022	SO	N	25											
		LORNG_SB14004_8-10_06022022	FA96203-10	6/2/2022	SO	N	25											
	SB14005	LORNG_SB14005_0-1_06022022	FA96203-11	6/2/2022	SO	N	25											
		LORNG_SB14005_8-10_06022022	FA96203-12	6/2/2022	SO	N	25											
FA96238	FIELDQC	LORNG_EB117_06032022	FA96238-11	6/3/2022	WQ	EB	25											
		LORNG_EB118_06042022	FA96238-23	6/4/2022	WQ	EB	25											
		LORNG_EB119_06052022	FA96238-47	6/5/2022	WQ	EB	25											
	SB05006	LORNG_SB05006_0-1_06042022	FA96238-24	6/4/2022	SO	N	25											
		LORNG_SB05006_0-1_06042022FD	FA96238-25	6/4/2022	SO	FD	25											
		LORNG_SB05006_8-10_06042022	FA96238-26	6/4/2022	SO	N	25											
	SB05007	LORNG_SB05007_0-1_06032022	FA96238-1	6/3/2022	SO	N	25											
		LORNG_SB05007_8-10_06032022	FA96238-2	6/3/2022	SO	N	25											
	SB05008	LORNG_SB05008_0-1_06032022	FA96238-3	6/3/2022	SO	N	25											
		LORNG_SB05008_8-10_06032022	FA96238-4	6/3/2022	SO	N	25											
	SB05009	LORNG_SB05009_0-1_06032022	FA96238-5	6/3/2022	SO	N	25											
		LORNG_SB05009_8-10_06032022	FA96238-6	6/3/2022	SO	N	25											
	SB05010	LORNG_SB05010_0-1-06032022	FA96238-49	6/3/2022	SO	N	25											
	SB05011	LORNG_SB05011_0-1_06032022	FA96238-7	6/3/2022	SO	N	25											
		LORNG_SB05011_8-10_06032022	FA96238-8	6/3/2022	SO	N	25											
	SB05012	LORNG_SB05012_0-1_06032022	FA96238-9	6/3/2022	SO	N	25											
		LORNG_SB05012_8-10_06032022	FA96238-10	6/3/2022	SO	N	25											
	SB05013	LORNG_SB05013_0-1_06032022	FA96238-12	6/3/2022	SO	N	25											
		LORNG_SB05013_8-10_06032022	FA96238-13	6/3/2022	SO	N	25											
	SB05014	LORNG_SB05014_0-1_06032022	FA96238-14	6/3/2022	SO	N	25											
		LORNG_SB05014_6-8_06032022	FA96238-15	6/3/2022	SO	N	25											
	SB05015	LORNG_SB05015_0-1_06032022	FA96238-16	6/3/2022	SO	N	25											
		LORNG_SB05015_8-10_06032022	FA96238-17	6/3/2022	SO	N	25											
	SB05017	LORNG_SB05017_0-1_06042022	FA96238-18	6/4/2022	SO	N	25											
		LORNG_SB05017_8-10_06042022	FA96238-19	6/4/2022	SO	N	25											
	SB05019	LORNG_SB05019_0-1_06042022	FA96238-20	6/4/2022	SO	N	25											
		LORNG_SB05019_8-10_06042022	FA96238-21	6/4/2022	SO	N	25											
	SB05020	LORNG_SB05020_0-1_06042022	FA96238-22	6/4/2022	SO	N	25											
		LORNG_SB05020_8-10_06042022	FA96238-27	6/4/2022	SO	N	25											
	SB09005	LORNG_SB09005_0-1_06052022	FA96238-28	6/5/2022	SO	N	25											
		LORNG_SB09005_8-10_06052022	FA96238-29	6/5/2022	SO	N	25											

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Table 1 -- Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	VOCs	SVOCs by SIM	SVOCs	PCBs	Pesticides	Metals		WetChem			Perchlorate
						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA96238	SB09006	LORNG_SB09006_0-1_06042022	FA96238-30	6/4/2022	SO	N	25											
		LORNG_SB09006_8-10_06042022	FA96238-31	6/4/2022	SO	N	25											
	SB09007	LORNG_SB09007_0-1_06042022	FA96238-32	6/4/2022	SO	N	25											
		LORNG_SB09007_8-10_06042022	FA96238-33	6/4/2022	SO	N	25											
	SB09008	LORNG_SB09008_0-1_06052022	FA96238-34	6/5/2022	SO	N	25											
		LORNG_SB09008_8-10_06052022	FA96238-35	6/5/2022	SO	N	25											
	SB18021	LORNG_SB18021_0-1_06052022	FA96238-36	6/5/2022	SO	N	25											
		LORNG_SB18021_5-7_06052022	FA96238-48	6/5/2022	SO	N	25											
	SB18022	LORNG_SB18022_0-1_06052022	FA96238-37	6/5/2022	SO	N	25											
	SB18023	LORNG_SB18023_0-1_06052022	FA96238-38	6/5/2022	SO	N	25											
		LORNG_SB18023_0-1_06052022FD	FA96238-39	6/5/2022	SO	FD	25											
		LORNG_SB18023_8-10_06052022	FA96238-40	6/5/2022	SO	N	25											
	SB18024	LORNG_SB18024_0-1_06052022	FA96238-41	6/5/2022	SO	N	25											
		LORNG_SB18024_8-10_06052022	FA96238-42	6/5/2022	SO	N	25											
	SB18025	LORNG_SB18025_0-1_06052022	FA96238-43	6/5/2022	SO	N	25											
		LORNG_SB18025_8-10_06052022	FA96238-44	6/5/2022	SO	N	25											
	SB18026	LORNG_SB18026_0-1_06052022	FA96238-45	6/5/2022	SO	N	25											
		LORNG_SB18026_8-10_06052022	FA96238-46	6/5/2022	SO	N	25											
FA96351	FIELDQC	LORNG_EB120_06062022	FA96351-13	6/6/2022	WQ	EB	25											
		LORNG_EB121_06072022	FA96351-25	6/7/2022	WQ	EB	25											
	SB01005	LORNG_SB01005_0-1_06072022	FA96351-26	6/7/2022	SO	N	25											
		LORNG_SB01005_8-10_06072022	FA96351-27	6/7/2022	SO	N	25											
	SB01007	LORNG_SB01007_0-1_06072022	FA96351-14	6/7/2022	SO	N	25											
		LORNG_SB01007_8-10_06072022	FA96351-15	6/7/2022	SO	N	25											
	SB01008	LORNG_SB01008_0-1_06072022	FA96351-16	6/7/2022	SO	N	25											
		LORNG_SB01008_8-10_06072022	FA96351-17	6/7/2022	SO	N	25											
	SB01009	LORNG_SB01009_0-1_06072022	FA96351-18	6/7/2022	SO	N	25											
		LORNG_SB01009_8-10_06072022	FA96351-19	6/7/2022	SO	N	25											
		LORNG_SB01009_8-10_06072022FD	FA96351-20	6/7/2022	SO	FD	25											
	SB01010	LORNG_SB01010_0-1_06062022	FA96351-1	6/6/2022	SO	N	25											
		LORNG_SB01010_8-10_06062022	FA96351-2	6/6/2022	SO	N	25											
	SB01011	LORNG_SB01011_0-1_06062022	FA96351-3	6/6/2022	SO	N	25											
		LORNG_SB01011_8-10_06062022	FA96351-6	6/6/2022	SO	N	25											
		LORNG_SB01011_8-10_06062022FD	FA96351-7	6/6/2022	SO	FD	25											
	SB01012	LORNG_SB01012_0-1_06062022	FA96351-21	6/7/2022	SO	N	25											
		LORNG_SB01012_0-1_06062022FD	FA96351-22	6/6/2022	SO	FD	25											
		LORNG_SB01012_8-10_06062022	FA96351-23	6/6/2022	SO	N	25											
	SB01013	LORNG_SB01013_0-1_06072022	FA96351-28	6/7/2022	SO	N	25											
		LORNG_SB01013_8-10_06072022	FA96351-29	6/7/2022	SO	N	25											
	SB01014	LORNG_SB01014_0-1_06062022	FA96351-8	6/6/2022	SO	N	25											
		LORNG_SB01014_5-7_06062022	FA96351-24	6/6/2022	SO	N	25											
	SB01016	LORNG_SB01016_0-1_06072022	FA96351-30	6/7/2022	SO	N	25											
		LORNG_SB01016_8-10_06072022	FA96351-31	6/7/2022	SO	N	25											
		LORNG_SB01016_8-10_06072022FD	FA96351-32	6/7/2022	SO	FD	25											
	SB18018	LORNG_SB18018_0-1_06062022	FA96351-9	6/6/2022	SO	N	25											
		LORNG_SB18018_8-10_06062022	FA96351-10	6/6/2022	SO	N	25											
	SB18019	LORNG_SB18019_0-1_06062022	FA96351-11	6/6/2022	SO	N	25											
		LORNG_SB18019_8-10_06062022	FA96351-12	6/6/2022	SO	N	25											

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						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA96551	FIELDQC	LORNG_EB122_06142022	FA96551-13	6/14/2022	WQ	EB	25											
	SB18013	LORNG_SB18013_0-1_06142022	FA96551-1	6/14/2022	SO	N	25											
		LORNG_SB18013_8-10_06142022	FA96551-2	6/14/2022	SO	N	25											
	SB18015	LORNG_SB18015_0-1_06142022	FA96551-3	6/14/2022	SO	N	25											
		LORNG_SB18015_8-10_06142022	FA96551-4	6/14/2022	SO	N	25											
	SB18017	LORNG_SB18017_0-1_06142022	FA96551-5	6/14/2022	SO	N	25											
		LORNG_SB18017_8-10_06142022	FA96551-6	6/14/2022	SO	N	25											
	SB22001	LORNG_SB22001_0-1_06142022	FA96551-7	6/14/2022	SO	N	25											
		LORNG_SB22001_7-8_06142022	FA96551-8	6/14/2022	SO	N	25											
	SB22002	LORNG_SB22002_0-1_06142022	FA96551-9	6/14/2022	SO	N	25											
		LORNG_SB22002_6-7_06142022	FA96551-10	6/14/2022	SO	N	25											
	SB22003	LORNG_SB22003_0-1_06142022	FA96551-11	6/14/2022	SO	N	25											
		LORNG_SB22003_6-7_06142022	FA96551-12	6/14/2022	SO	N	25											
FA96616	SB16005	LORNG_SB16005_0-1_06172022	FA96616-11	6/17/2022	SO	N	25											
		LORNG_SB16005_8-10_06172022	FA96616-12	6/17/2022	SO	N	25											
	SB16006	LORNG_SB16006_0-1_06172022	FA96616-1	6/17/2022	SO	N	25											
		LORNG_SB16006_8-10_06172022	FA96616-2	6/17/2022	SO	N	25											
	SB16007	LORNG_SB16007_0-1_06172022	FA96616-3	6/17/2022	SO	N	25											
		LORNG_SB16007_4-5_06172022	FA96616-4	6/17/2022	SO	N	25											
	SB16008	LORNG_SB16008_0-1_06172022	FA96616-13	6/17/2022	SO	N	25											
		LORNG_SB16008_3-4_06172022	FA96616-14	6/17/2022	SO	N	25											
	SB16009	LORNG_SB16009_0-1_06172022	FA96616-15	6/17/2022	SO	N	25											
	SB16010	LORNG_SB16010_0-1_06172022	FA96616-5	6/17/2022	SO	N	25											
	SB16011	LORNG_SB16011_0-1_06172022	FA96616-6	6/17/2022	SO	N	25											
		LORNG_SB16011_8-10_06172022	FA96616-7	6/17/2022	SO	N	25											
	SB16012	LORNG_SB16012_0-1_06172022	FA96616-8	6/17/2022	SO	N	25											
		LORNG_SB16012_0-1_06172022FD	FA96616-9	6/17/2022	SO	FD	25											
		LORNG_SB16012_8-10_06172022	FA96616-10	6/17/2022	SO	N	25											
FA96627	FIELDQC	LORNG_EB123_06152022	FA96627-13	6/15/2022	WQ	EB	25											
	SB18007	LORNG_SB18007_0-1_06152022	FA96627-1	6/15/2022	SO	N	25											
		LORNG_SB18007_8-10_06152022	FA96627-2	6/15/2022	SO	N	25											
	SB18008	LORNG_SB18008_0-1_06152022	FA96627-3	6/15/2022	SO	N	25											
		LORNG_SB18008_7-8_06152022	FA96627-4	6/15/2022	SO	N	25											
	SB18009	LORNG_SB18009_0-1_06152022	FA96627-5	6/15/2022	SO	N	25											
		LORNG_SB18009_8-10_06152022	FA96627-6	6/15/2022	SO	N	25											
	SB18010	LORNG_SB18010_0-1_06152022	FA96627-7	6/15/2022	SO	N	25											
		LORNG_SB18010_8-10_06152022	FA96627-8	6/15/2022	SO	N	25											
	SB18011	LORNG_SB18011_0-1_06152022	FA96627-9	6/15/2022	SO	N	25											
		LORNG_SB18011_8-10_06152022	FA96627-10	6/15/2022	SO	N	25											
		LORNG_SB18011_8-10_06152022FD	FA96627-11	6/15/2022	SO	FD	25											
	SB18012	LORNG_SB18012_0-1_06152022	FA96627-12	6/15/2022	SO	N	25											
		LORNG_SB18012_8-10_06152022	FA96627-14	6/15/2022	SO	N	25											
	SB18014	LORNG_SB18014_0-1_06152022	FA96627-15	6/15/2022	SO	N	25											
		LORNG_SB18014_8-10_06152022	FA96627-16	6/15/2022	SO	N	25											
	SB18016	LORNG_SB18016_0-1_06152022	FA96627-17	6/15/2022	SO	N	25											
		LORNG_SB18016_8-10_06152022	FA96627-18	6/15/2022	SO	N	25											
FA96640	FIELDQC	LORNG_EB124_06162022	FA96640-13	6/16/2022	WQ	EB	25											

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						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA96640A	SB06007	LORNG_SB06007_0-1_06162022	FA96640-1	6/16/2022	SO	N	25											
		LORNG_SB06007_6-7_06162022	FA96640-2	6/16/2022	SO	N	25											
	SB06009	LORNG_SB06009_0-1_06162022	FA96640-3	6/16/2022	SO	N	25											
		LORNG_SB06009_8-10_06162022	FA96640-4	6/16/2022	SO	N	25											
		LORNG_SB06009_8-10_06162022FD	FA96640-5	6/16/2022	SO	FD	25											
	SB06011	LORNG_SB06011_0-1_06162022	FA96640-6	6/16/2022	SO	N	25											
		LORNG_SB06011_8-10_06162022	FA96640-7	6/16/2022	SO	N	25											
		LORNG_SB06011_8-10_06162022FD	FA96640-8	6/16/2022	SO	FD	25											
	SB06012	LORNG_SB06012_0-1_06162022	FA96640-14	6/16/2022	SO	N	25											
		LORNG_SB06012_1-2_06162022	FA96640-15	6/16/2022	SO	N	25											
	SB06013	LORNG_SB06013_0-1_06162022	FA96640-9	6/16/2022	SO	N	25											
		LORNG_SB06013_3-4_06162022	FA96640-10	6/16/2022	SO	N	25											
	SB16013	LORNG_SB16013_0-1_06162022	FA96640-16	6/16/2022	SO	N	25											
		LORNG_SB16013_8-10_06162022	FA96640-17	6/16/2022	SO	N	25											
	SB16014	LORNG_SB16014_0-1_06162022	FA96640-18	6/16/2022	SO	N	25											
		LORNG_SB16014_8-10_06162022	FA96640-19	6/16/2022	SO	N	25											
	SB18020	LORNG_SB18020_0-1_06162022	FA96640-11	6/16/2022	SO	N	25											
		LORNG_SB18020_8-10_06162022	FA96640-12	6/16/2022	SO	N	25											
FA96691	FIELDQC	LORNG_EB125_06182022	FA96691-13	6/18/2022	WQ	EB	25											
		LORNG_EB126_06192022	FA96691-24	6/19/2022	WQ	EB	25											
		LORNG_EB127_06192022	FA96691-46	6/19/2022	WQ	EB	25											
	SB17004	LORNG_SB17004_0-1_06192022	FA96691-25	6/19/2022	SO	N	25											
		LORNG_SB17004_8-10_06192022	FA96691-26	6/19/2022	SO	N	25											
	SB17005	LORNG_SB17005_0-1_06192022	FA96691-27	6/19/2022	SO	N	25											
		LORNG_SB17005_8-10_06192022	FA96691-28	6/19/2022	SO	N	25											
	SB17006	LORNG_SB17006_0-1_06192022	FA96691-34	6/19/2022	SO	N	25											
		LORNG_SB17006_8-10_06192022	FA96691-35	6/19/2022	SO	N	25											
	SB17007	LORNG_SB17007_0-1_06192022	FA96691-29	6/19/2022	SO	N	25											
		LORNG_SB17007_8-10_06192022	FA96691-30	6/19/2022	SO	N	25											
	SB20005	LORNG_SB20005_0-1_06182022	FA96691-1	6/18/2022	SO	N	25											
		LORNG_SB20005_2-3_06182022	FA96691-14	6/18/2022	SO	N	25											
	SB20006	LORNG_SB20006_0-1_06182022	FA96691-2	6/18/2022	SO	N	25											
		LORNG_SB20006_0-1_06182022FD	FA96691-3	6/18/2022	SO	FD	25											
		LORNG_SB20006_8-10_06182022	FA96691-4	6/18/2022	SO	N	25											
	SB20007	LORNG_SB20007_0-1_06182022	FA96691-5	6/18/2022	SO	N	25											
		LORNG_SB20007_8-10_06182022	FA96691-6	6/18/2022	SO	N	25											
	SB20008	LORNG_SB20008_0-1_06182022	FA96691-7	6/18/2022	SO	N	25											
		LORNG_SB20008_8-10_06182022	FA96691-8	6/18/2022	SO	N	25											
	SB21001	LORNG_SB21001_0-1_06182022	FA96691-9	6/18/2022	SO	N	25											
		LORNG_SB21001_0-1_06182022FD	FA96691-10	6/18/2022	SO	FD	25											
		LORNG_SB21001_2-3_06182022	FA96691-11	6/18/2022	SO	N	25											
	SB21002	LORNG_SB21002_0-1_06192022	FA96691-36	6/19/2022	SO	N	25											
		LORNG_SB21002_1-2_06192022	FA96691-37	6/19/2022	SO	N	25											
	SB24001	LORNG_SB24001_0-1_06182022	FA96691-15	6/18/2022	SO	N	25											
		LORNG_SB24001_3-4_06182022	FA96691-16	6/18/2022	SO	N	25											
	SB24002	LORNG_SB24002_0-1_06182022	FA96691-31	6/18/2022	SO	N	25											
		LORNG_SB24002_8-10_06182022	FA96691-32	6/18/2022	SO	N	25											

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						Method Class												
						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FA96691	SB24004	LORNG_SB24004_0-1_06182022	FA96691-17	6/18/2022	SO	N	25											
		LORNG_SB24004_2-3_06182022	FA96691-18	6/18/2022	SO	N	25											
	SB24005	LORNG_SB24005_0-1_06182022	FA96691-19	6/18/2022	SO	N	25											
		LORNG_SB24005_8-10_06182022	FA96691-20	6/18/2022	SO	N	25											
	SB24006	LORNG_SB24006_0-1_06182022	FA96691-21	6/18/2022	SO	N	25											
		LORNG_SB24006_8-10_06182022	FA96691-22	6/18/2022	SO	N	25											
	SS18001	LORNG_SS18001_0-1_06192022	FA96691-33	6/19/2022	SO	N	25											
	SS18002	LORNG_SS18002_0-1_06192022	FA96691-38	6/19/2022	SO	N	25											
	SS18003	LORNG_SS18003_0-1_06192022	FA96691-39	6/19/2022	SO	N	25											
	SS18004	LORNG_SS18004_0-1_06192022	FA96691-40	6/19/2022	SO	N	25											
	SS18005	LORNG_SS18005_0-1_06192022	FA96691-41	6/19/2022	SO	N	25											
	SS18006	LORNG_SS18006_0-1_06192022	FA96691-42	6/19/2022	SO	N	25											
	SS18007	LORNG_SS18007_0-1_06192022	FA96691-43	6/19/2022	SO	N	25											
	SS18008	LORNG_SS18008_0-1_06192022	FA96691-44	6/19/2022	SO	N	25											
	SS18009	LORNG_SS18009_0-1_06192022	FA96691-45	6/19/2022	SO	N	25											
	SS18010	LORNG_SS18010_0-1_06192022	FA96691-47	6/19/2022	SO	N	25											
	SS21001	LORNG_SS21001_0-1_06182022	FA96691-23	6/18/2022	SO	N	25											
	SS21002	LORNG_SS21002_0-1_06182022	FA96691-12	6/18/2022	SO	N	25											
FA96726	FIELDQC	LORNG_EB128_06202022	FA96726-25	6/20/2022	WQ	EB	25											
	SB12005	LORNG_SB12005_0-1_06202022	FA96726-1	6/20/2022	SO	N	25											
		LORNG_SB12005_8-10_06202022	FA96726-2	6/20/2022	SO	N	25											
		LORNG_SB12005_8-10_06202022FD	FA96726-13	6/20/2022	SO	FD	25											
	SB12006	LORNG_SB12006_0-1_06202022	FA96726-14	6/20/2022	SO	N	25											
		LORNG_SB12006_8-10_06202022	FA96726-15	6/20/2022	SO	N	25											
	SB12007	LORNG_SB12007_0-1_06202022	FA96726-3	6/20/2022	SO	N	25											
		LORNG_SB12007_8-10_06202022	FA96726-4	6/20/2022	SO	N	25											
	SB12010	LORNG_SB12010_0-1_06202022	FA96726-5	6/20/2022	SO	N	25											
		LORNG_SB12010_8-10_06202022	FA96726-6	6/20/2022	SO	N	25											
	SB12011	LORNG_SB12011_0-1_06202022	FA96726-7	6/20/2022	SO	N	25											
		LORNG_SB12011_2-3_06202022	FA96726-8	6/20/2022	SO	N	25											
	SS05006	LORNG_SS05006_0-1_06202022	FA96726-16	6/20/2022	SO	N	25											
	SS05007	LORNG_SS05007_0-1_06202022	FA96726-17	6/20/2022	SO	N	25											
	SS12001	LORNG_SS12001_0-1_06212022	FA96726-26	6/21/2022	SO	N	25											
	SS12002	LORNG_SS12002_0-1_06212022	FA96726-27	6/21/2022	SO	N	25											
	SS13001	LORNG_SS13001_0-1_06202022	FA96726-18	6/20/2022	SO	N	25											
	SS13002	LORNG_SS13002_0-1_06202022	FA96726-19	6/20/2022	SO	N	25											
	SS13003	LORNG_SS13003_0-1_06202022	FA96726-20	6/20/2022	SO	N	25											
	SS13004	LORNG_SS13004_0-1_06202022	FA96726-21	6/20/2022	SO	N	25											
	SS13005	LORNG_SS13005_0-1_06202022	FA96726-22	6/20/2022	SO	N	25											
	SS13006	LORNG_SS13006_0-1_06202022	FA96726-23	6/20/2022	SO	N	25											
	SS13007	LORNG_SS13007_0-1_06202022	FA96726-28	6/20/2022	SO	N	25											
	SS13008	LORNG_SS13008_0-1_06212022	FA96726-29	6/21/2022	SO	N	25											
	SS13009	LORNG_SS13009_0-1_06212022	FA96726-30	6/21/2022	SO	N	25											
	SS13010	LORNG_SS13010_0-1_06212022	FA96726-31	6/21/2022	SO	N	25											
	SS19009	LORNG_SS19009_0-1_06202022	FA96726-9	6/20/2022	SO	N	25											
	SS19010	LORNG_SS19010_0-1_06202022	FA96726-24	6/20/2022	SO	N	25											
	SS19011	LORNG_SS19011_0-1_06202022	FA96726-10	6/20/2022	SO	N	25											
	SS19012	LORNG_SS19012_0-1_06202022	FA96726-11	6/20/2022	SO	N	25											
	SS19013	LORNG_SS19013_0-1_06202022	FA96726-12	6/20/2022	SO	N	25											

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 1 -- Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

							PFAS	VOCs	SVOCs by SIM	SVOCs	PCBs	Pesticides	Metals		WetChem			Perchlorate
						Method Class	PFAS	VOCs	SVOCs by SIM	SVOCs	PCBs	Pesticides	Metals		WetChem			Perchlorate
						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP2461	FIELDQC	LORNG_TB01_05192022	SP2461-5	5/19/2022	SQ	TB		71										
	SB08001	LORNG_SB08001_0-1_05192022_K	SP2461-1	5/19/2022	SO	N		71	18	55				1	1			
			SP2461-1	5/19/2022	SO	N							22					
		LORNG_SB08001_8-10_05192022_K	SP2461-2	5/19/2022	SO	N		71	18	55				1	1			
			SP2461-2	5/19/2022	SO	N							22					
	SB08006	LORNG_SB08006_0-1_05192022_K	SP2461-3	5/19/2022	SO	N		71	19	55	10	21		1	1		1	
			SP2461-3	5/19/2022	SO	N							22					
		LORNG_SB08006_8-10_05192022_K	SP2461-4	5/19/2022	SO	N		71	19	55	10	21		1	1		1	
			SP2461-4	5/19/2022	SO	N							22					
SP2522	FIELDQC	LORNG_TB02_05232022	SP2522-3	5/23/2022	SQ	TB		71										
	SB11002	LORNG_SB11002_0-1_05222022_K	SP2522-1	5/22/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB11002_8-10_05222022_K	SP2522-2	5/22/2022	SO	N		71	18	55			22	1	1			
SP2566	FIELDQC	LORNG_TB03_05252022	SP2566-5	5/25/2022	SQ	TB		71										
	SB13008	LORNG_SB13008_0-1_05242022_K	SP2566-1	5/24/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB13008_8-10_05242022_K	SP2566-2	5/24/2022	SO	N		71	18	55			22	1	1			
	SB13017	LORNG_SB13017_0-1_05242022_K	SP2566-3	5/24/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB13017_8-10_05242022_K	SP2566-4	5/24/2022	SO	N		71	18	55			22	1	1			
SP2692	FIELDQC	LORNG_TB04_05312022	SP2692-3	5/31/2022	SQ	TB		71										
	SB06010	LORNG_SB06010_0-1_05312022_K	SP2692-1	5/31/2022	SO	N		71	18	55	10	21	22	1	1			
		LORNG_SB06010_5-6_05312022_K	SP2692-2	5/31/2022	SO	N		71	18	55	10	21	22	1	1			
SP2721	FIELDQC	LORNG_TB05_06012022	SP2721-4	6/1/2022	SQ	TB		71										
	SB13018	LORNG_SB13018_0-1_06012022_K	SP2721-1	6/1/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB13018_8-10_06012022_K	SP2721-2	6/1/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB13018_8-10_06012022FDK	SP2721-3	6/1/2022	SO	FD		71							1			
SP2809	FIELDQC	LORNG_TB06_06062022	SP2809-3	6/6/2022	SQ	TB		71										
	SB09006	LORNG_SB09006_0-1_06042022_K	SP2809-1	6/4/2022	SO	N		71	19	55	10	21	22	1	1			
		LORNG_SB09006_8-10_06042022_K	SP2809-2	6/4/2022	SO	N		71	19	55	10	21	22	1	1			
SP2868	FIELDQC	LORNG_TB07_06082022	SP2868-4	6/8/2022	SQ	TB		71										
	SB01009	LORNG_SB01009-0-1_06072022_K	SP2868-6	6/7/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB01009-8-10_06072022_K	SP2868-7	6/7/2022	SO	N		71	18	55			22	1	1			
	SB01014	LORNG_SB01014-0-1_06062022_K	SP2868-5	6/6/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB01014-5-7_06062022_K	SP2868-8	6/6/2022	SO	N		71	18	55			22	1	1			
	SB01016	LORNG_SB01016-0-1_06072022_K	SP2868-1	6/7/2022	SO	N		71	19	55	10	21	22	1	1			
		LORNG_SB01016-8-10_06072022_K	SP2868-2	6/7/2022	SO	N		71	19	55	10	21	22	1	1			
		LORNG_SB01016-8-10_06072022FDK	SP2868-3	6/7/2022	SO	FD		71	19	55	10	21	22	1	1			
SP3101	FIELDQC	LORNG_TB08_06172022	SP3101-5	6/17/2022	SQ	TB		71										
	SB16006	LORNG_SB16006_0-1_06172022_K	SP3101-1	6/17/2022	SO	N		71	18	55			22	1	1			
		LORNG_SB16006_8-10_06172022_K	SP3101-2	6/17/2022	SO	N		71	18	55			22	1	1			
	SB16011	LORNG_SB16011_0-1_06172022_K	SP3101-3	6/17/2022	SO	N		71	19	55	10	21	22	1	1			
		LORNG_SB16011_8-10_06172022_K	SP3101-4	6/17/2022	SO	N		71	19	55	10	21	22	1	1			
SP3119	FIELDQC	LORNG_TB09_06182022	SP3119-4	6/18/2022	SQ	TB		71										
	SB21001	LORNG_SB21001_0-1_06182022_K	SP3119-1	6/18/2022	SO	N		71	19	55	10	21	22	1	1			
		LORNG_SB21001_0-1_06182022FD_K	SP3119-2	6/18/2022	SO	FD		71	19	55	10	21	22	1	1			
		LORNG_SB21001_2-3_06182022_K	SP3119-3	6/18/2022	SO	N		71	19	55	10	21	22	1	1			

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 1 -- Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	VOCs	SVOCs by SIM	SVOCs	PCBs	Pesticides	Metals		WetChem			Perchlorate
						Analysis Method	M537	SW8260C	BNASIMD	SW8270D	SW8082A	SW8081B	SW6010C	SW7471B	A2540G	D2216	LYDKHN	SW6850
						Fraction	T	T	T	T	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	169966				169967				170145				170363						170364				200-3792			
			Location	SB11002				SB13017				SB09006				SB21001						SB16011				SB01016			
			Sample Date	5/22/2022				5/24/2022				6/4/2022				6/18/2022						6/17/2022				6/7/2022			
			Sample ID	LORNG_SB11002_0-1_052222_C		LORNG_SB11002_8-10_052222_C		LORNG_SB13017_0-1_052422_C		LORNG_SB13017_8-10_052422_C		LORNG_SB09006_0-1_06042022_CT		LORNG_SB09006_8-10_06042022_CT		LORNG_SB21001_0-1_06182022_C		LORNG_SB21001_0-1_06182022FD_C		LORNG_SB21001_2-3_06182022_C		LORNG_SB16011_0-1_06172022_C		LORNG_SB16011_8-10_06172022_C		LORNG_SB01016-0-1_06072022_E		LORNG_SB01016-8-10_06072022_E		LORNG_SB01016-8-10_06072022FDE	
			QC Code	N		N		N		N		N		N		N		FD		N		N		N		N		N		FD	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG																										
		1,1,1-TRICHLOROETHANE	UG/KG																										
		1,1,2,2-TETRACHLOROETHANE	UG/KG																										
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG																										
		1,1,2-TRICHLOROETHANE	UG/KG																										
		1,1-DICHLOROETHANE	UG/KG																										
		1,1-DICHLOROETHENE	UG/KG																										
		1,1-DICHLOROPROPENE	UG/KG																										
		1,2,3-TRICHLOROBENZENE	UG/KG																										
		1,2,3-TRICHLOROPROPANE	UG/KG																										
		1,2,4-TRICHLOROBENZENE	UG/KG																										
		1,2,4-TRIMETHYLBENZENE	UG/KG																										
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG																										
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG																										
		1,2-DICHLOROBENZENE	UG/KG																										
		1,2-DICHLOROETHANE	UG/KG																										
		1,2-DICHLOROPROPANE	UG/KG																										
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG																										
		1,3-DICHLOROBENZENE	UG/KG																										
		1,3-DICHLOROPROPANE	UG/KG																										
		1,4-DICHLOROBENZENE	UG/KG																										
		2,2-DICHLOROPROPANE	UG/KG																										
		2-CHLOROTOLUENE	UG/KG																										
		2-HEXANONE	UG/KG																										
		4-CHLOROTOLUENE	UG/KG																										
		ACETONE	UG/KG																										
		BENZENE	UG/KG																										
		BROMOBENZENE	UG/KG																										
		BROMOCHLOROMETHANE	UG/KG																										
		BROMODICHLOROMETHANE	UG/KG																										
		BROMOFORM	UG/KG																										
		BROMOMETHANE	UG/KG																										
		CARBON DISULFIDE	UG/KG																										
		CARBON TETRACHLORIDE	UG/KG																										
		CHLOROBENZENE	UG/KG																										
		CHLOROETHANE	UG/KG																										
		CHLOROFORM	UG/KG																										
		CHLOROMETHANE	UG/KG																										
		CIS-1,2-DICHLOROETHYLENE	UG/KG																										
		CIS-1,3-DICHLOROPROPENE	UG/KG																										
		CYCLOHEXANE	UG/KG																										
		DIBROMOCHLOROMETHANE	UG/KG																										
		DIBROMOMETHANE	UG/KG																										
		DICHLORODIFLUOROMETHANE	UG/KG																										
		ETHYLBENZENE	UG/KG																										
		HEXACHLOROBUTADIENE	UG/KG																										
		IODOMETHANE (METHYL IODIDE)	UG/KG																										
		ISOPROPYLBENZENE (CUMENE)	UG/KG																										
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG																										
		METHYL ACETATE	UG/KG																										
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG																										
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG																										

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Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	169966				169967				170145				170363						170364				200-3792			
			Location	SB11002				SB13017				SB09006				SB21001						SB16011				SB01016			
			Sample Date	5/22/2022				5/24/2022				6/4/2022				6/18/2022						6/17/2022				6/7/2022			
			Sample ID	LORNG_SB11002_0-1_052222_C		LORNG_SB11002_8-10_052222_C		LORNG_SB13017_0-1_052422_C		LORNG_SB13017_8-10_052422_C		LORNG_SB09006_0-1_06042022_CT		LORNG_SB09006_8-10_06042022_CT		LORNG_SB21001_0-1_06182022_C		LORNG_SB21001_0-1_06182022FD_C		LORNG_SB21001_2-3_06182022_C		LORNG_SB16011_0-1_06172022_C		LORNG_SB16011_8-10_06172022_C		LORNG_SB01016-0-1_06072022_E		LORNG_SB01016-8-10_06072022_E		LORNG_SB01016-8-10_06072022FDE	
			QC Code	N		N		N		N		N		N		N		FD		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	METHYLCYCLOHEXANE	UG/KG																										
		METHYLENE CHLORIDE	UG/KG																										
		NAPHTHALENE	UG/KG																										
		N-BUTYLBENZENE	UG/KG																										
		N-PROPYLBENZENE	UG/KG																										
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG																										
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG																										
		SEC-BUTYLBENZENE	UG/KG																										
		STYRENE	UG/KG																										
		T-BUTYLBENZENE	UG/KG																										
		TERT-BUTYL METHYL ETHER	UG/KG																										
		TETRACHLOROETHYLENE(PCE)	UG/KG																										
		TOLUENE	UG/KG																										
		TRANS-1,2-DICHLOROETHENE	UG/KG																										
		TRANS-1,3-DICHLOROPROPENE	UG/KG																										
		TRICHLOROETHYLENE (TCE)	UG/KG																										
		TRICHLOROFLUOROMETHANE	UG/KG																										
		VINYL ACETATE	UG/KG																										
		VINYL CHLORIDE	UG/KG																										
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG																										
		2-METHYLNAPHTHALENE	UG/KG																										
		ACENAPHTHENE	UG/KG																										
		ACENAPHTHYLENE	UG/KG																										
		ANTHRACENE	UG/KG																										
		BENZO(A)ANTHRACENE	UG/KG																										
		BENZO(A)PYRENE	UG/KG																										
		BENZO(B)FLUORANTHENE	UG/KG																										
		BENZO(G,H,I)PERYLENE	UG/KG																										
		BENZO(K)FLUORANTHENE	UG/KG																										
		CHRYSENE	UG/KG																										
		DIBENZ(A,H)ANTHRACENE	UG/KG																										
		FLUORANTHENE	UG/KG																										
		FLUORENE	UG/KG																										
		INDENO(1,2,3-C,D)PYRENE	UG/KG																										
		NAPHTHALENE	UG/KG																										
		PENTACHLOROPHENOL	UG/KG																										
		PHENANTHRENE	UG/KG																										
		PYRENE	UG/KG																										
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG																										
		1,2-DICHLOROBENZENE	UG/KG																										
		1,2-DIPHENYLHYDRAZINE	UG/KG																										
		1,3-DICHLOROBENZENE	UG/KG																										
		1,4-DICHLOROBENZENE	UG/KG																										
		1-METHYLNAPHTHALENE	UG/KG																										
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG																										
		2,3,4,6-TETRACHLOROPHENOL	UG/KG																										
		2,4,5-TRICHLOROPHENOL	UG/KG																										
		2,4,6-TRICHLOROPHENOL	UG/KG																										
		2,4-DICHLOROPHENOL	UG/KG																										
		2,4-DIMETHYLPHENOL	UG/KG																										
		2,4-DINITROPHENOL	UG/KG																										
		2,4-DINITROTOLUENE	UG/KG																										
		2,6-DINITROTOLUENE	UG/KG																										
		2-CHLORONAPHTHALENE	UG/KG																										

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Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		169966				169967				170145				170363						170364				200-3792					
		Location		SB11002				SB13017				SB09006				SB21001						SB16011				SB01016					
		Sample Date		5/22/2022				5/24/2022				6/4/2022				6/18/2022						6/17/2022				6/7/2022					
		Sample ID		LORNG_SB11002_0-1_052222_C		LORNG_SB11002_8-10_052222_C		LORNG_SB13017_0-1_052422_C		LORNG_SB13017_8-10_052422_C		LORNG_SB09006_0-1_06042022_CT		LORNG_SB09006_8-10_06042022_CT		LORNG_SB21001_0-1_06182022_C		LORNG_SB21001_0-1_06182022FD_C		LORNG_SB21001_2-3_06182022_C		LORNG_SB16011_0-1_06172022_C		LORNG_SB16011_8-10_06172022_C		LORNG_SB01016-0-1_06072022_E		LORNG_SB01016-8-10_06072022_E		LORNG_SB01016-8-10_06072022FDE	
		QC Code		N		N		N		N		N		N		N		FD		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	2-CHLOROPHENOL	UG/KG																												
		2-METHYLPHENOL (O-CRESOL)	UG/KG																												
		2-NITROANILINE	UG/KG																												
		2-NITROPHENOL	UG/KG																												
		3,3'-DICHLOROBENZIDINE	UG/KG																												
		3-NITROANILINE	UG/KG																												
		4,6-DINITRO-2-METHYLPHENOL	UG/KG																												
		4-BROMOPHENYL PHENYL ETHER	UG/KG																												
		4-CHLORO-3-METHYLPHENOL	UG/KG																												
		4-CHLOROANILINE	UG/KG																												
		4-CHLOROPHENYL PHENYL ETHER	UG/KG																												
		4-NITROANILINE	UG/KG																												
		4-NITROPHENOL	UG/KG																												
		BENZALDEHYDE	UG/KG																												
		BENZIDINE	UG/KG																												
		BENZOIC ACID	UG/KG																												
		BENZYL ALCOHOL	UG/KG																												
		BENZYL BUTYL PHTHALATE	UG/KG																												
		BIPHENYL (DIPHENYL)	UG/KG																												
		BIS(2-CHLOROETHOXY) METHANE	UG/KG																												
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG																												
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG																												
		CARBAZOLE	UG/KG																												
		CRESOLS, M & P	UG/KG																												
		DIBENZOFURAN	UG/KG																												
		DIETHYL PHTHALATE	UG/KG																												
		DIMETHYL PHTHALATE	UG/KG																												
		DI-N-BUTYL PHTHALATE	UG/KG																												
		DI-N-OCTYLPHTHALATE	UG/KG																												
		HEXACHLOROBENZENE	UG/KG																												
		HEXACHLOROBUTADIENE	UG/KG																												
		HEXACHLOROCYCLOPENTADIENE	UG/KG																												
		HEXACHLOROETHANE	UG/KG																												
		ISOPHORONE	UG/KG																												
		NITROBENZENE	UG/KG																												
		N-NITROSODIMETHYLAMINE	UG/KG																												
		N-NITROSODI-N-PROPYLAMINE	UG/KG																												
		N-NITROSODIPHENYLAMINE	UG/KG																												
		PHENOL	UG/KG																												
PCBs	T	PCB, TOTAL	UG/KG																												
		PCB-1016 (AROCLOR 1016)	UG/KG																												
		PCB-1221 (AROCLOR 1221)	UG/KG																												
		PCB-1232 (AROCLOR 1232)	UG/KG																												
		PCB-1242 (AROCLOR 1242)	UG/KG																												
		PCB-1248 (AROCLOR 1248)	UG/KG																												
		PCB-1254 (AROCLOR 1254)	UG/KG																												
		PCB-1260 (AROCLOR 1260)	UG/KG																												
		PCB-1262 (AROCLOR 1262)	UG/KG																												
		PCB-1268 (AROCLOR 1268)	UG/KG																												

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	169966		169967		170145		170363			170364		200-3792		
			Location	SB11002		SB13017		SB09006		SB21001			SB16011		SB01016		
			Sample Date	5/22/2022		5/24/2022		6/4/2022		6/18/2022			6/17/2022		6/7/2022		
			Sample ID	LORNG_SB11002_0-1_052222_C	LORNG_SB11002_8-10_052222_C	LORNG_SB13017_0-1_052422_C	LORNG_SB13017_8-10_052422_C	LORNG_SB09006_0-1_06042022_CT	LORNG_SB09006_8-10_06042022_CT	LORNG_SB21001_0-1_06182022_C	LORNG_SB21001_0-1_06182022FD_C	LORNG_SB21001_2-3_06182022_C	LORNG_SB16011_0-1_06172022_C	LORNG_SB16011_8-10_06172022_C	LORNG_SB01016-0-1_06072022_E	LORNG_SB01016-8-10_06072022_E	LORNG_SB01016-8-10_06072022FDE
			QC Code	N	N	N	N	N	N	N	FD	N	N	N	N	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Pesticides	T	ALDRIN	UG/KG														
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG														
		ALPHA ENDOSULFAN	UG/KG														
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG														
		BETA ENDOSULFAN	UG/KG														
		CIS-CHLORDANE	UG/KG														
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG														
		DIELDRIN	UG/KG														
		ENDOSULFAN SULFATE	UG/KG														
		ENDRIN	UG/KG														
		ENDRIN ALDEHYDE	UG/KG														
		ENDRIN KETONE	UG/KG														
		GAMMA BHC (LINDANE)	UG/KG														
		GAMMA-CHLORDANE	UG/KG														
		HEPTACHLOR	UG/KG														
		HEPTACHLOR EPOXIDE	UG/KG														
		METHOXYCHLOR	UG/KG														
		P,P'-DDD	UG/KG														
		P,P'-DDE	UG/KG														
		P,P'-DDT	UG/KG														
		TOXAPHENE	UG/KG														
Metals	T	ALUMINUM	MG/KG														
		ANTIMONY	MG/KG														
		ARSENIC	MG/KG														
		BARIUM	MG/KG														
		BERYLLIUM	MG/KG														
		CADMIUM	MG/KG														
		CALCIUM	MG/KG														
		CHROMIUM, TOTAL	MG/KG														
		COBALT	MG/KG														
		COPPER	MG/KG														
		IRON	MG/KG														
		LEAD	MG/KG														
		MAGNESIUM	MG/KG														
		MANGANESE	MG/KG														
		MERCURY	MG/KG														
		NICKEL	MG/KG														
		POTASSIUM	MG/KG														
		SELENIUM	MG/KG														
		SILVER	MG/KG														
		SODIUM	MG/KG														
		THALLIUM	MG/KG														
		VANADIUM	MG/KG														
		ZINC	MG/KG														
WetChem	T	SOLIDS, PERCENT	PERCENT												69.4	83.2	81.1
		TOTAL ORGANIC CARBON	MG/KG	31,600 J	382 J	9,620	1,100	13,600	2,310	143,000 J	42,400 J	2,250	14,400	2,710			
			UG/G														
Perchlorate	T	PERCHLORATE	UG/KG												0.57 U	0.46 U	0.48 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	200-63532		200-63719		200-63720		200-63883			200-63885		SP2461			
		Location	SB08006		SB06010		SB09006		SB21001			SB16011		FIELDQC	SB08001		SB08006	
		Sample Date	5/19/2022		5/31/2022		6/4/2022		6/18/2022			6/17/2022		5/19/2022	5/19/2022		5/19/2022	
		Sample ID	LORNG_SB08006_01_05192022_E	LORNG_SB08006_810_05192022_E	LORNG_SB06010_01_05312022_E	LORNG_SB06010_56_05312022_E	LORNG_SB09006_01_06042022_E	LORNG_SB09006_810_06042022_E	LORNG_SB21001_01_06182022_E	LORNG_SB21001_01_06182022FD_E	LORNG_SB21001_23_06182022_E	LORNG_SB16011_01_06172022_E	LORNG_SB16011_810_06172022_E	LORNG_TB01_05192022	LORNG_SB08001_01_05192022_K	LORNG_SB08001_810_05192022_K	LORNG_SB08006_01_05192022_K	LORNG_SB08006_810_05192022_K
		QC Code	N	N	N	N	N	N	N	FD	N	N	N	TB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1,1-TRICHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1,2,2-TETRACHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1,2-TRICHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1-DICHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1-DICHLOROETHENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,1-DICHLOROPROPENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2,3-TRICHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2,3-TRICHLOROPROPANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2,4-TRICHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2,4-TRIMETHYLBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2-DICHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2-DICHLOROETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,2-DICHLOROPROPANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,3-DICHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,3-DICHLOROPROPANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		1,4-DICHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		2,2-DICHLOROPROPANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		2-CHLOROTOLUENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		2-HEXANONE	UG/KG											12 U	30 U	9.9 U	14 U	13
		4-CHLOROTOLUENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		ACETONE	UG/KG											6 J	34 U	9.9 U	14 U	13
		BENZENE	UG/KG											2 J	5.9 U	2 U	2.7 U	2.6
		BROMOBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		BROMOCHLOROMETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		BROMODICHLOROMETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		BROMOFORM	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		BROMOMETHANE	UG/KG											5 U	12 U	4 U	5.5 U	5.2
		CARBON DISULFIDE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		CARBON TETRACHLORIDE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		CHLOROBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		CHLOROETHANE	UG/KG											5 U	12 U	4 U	5.5 U	5.2
		CHLOROFORM	UG/KG											1 J	5.9 U	2 U	2.7 U	2.6
		CHLOROMETHANE	UG/KG											5 U	12 U	4 U	5.5 U	5.2
		CIS-1,2-DICHLOROETHYLENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		CIS-1,3-DICHLOROPROPENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		CYCLOHEXANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		DIBROMOCHLOROMETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		DIBROMOMETHANE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		DICHLORODIFLUOROMETHANE	UG/KG											5 U	12 U	4 U	5.5 U	5.2
		ETHYLBENZENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		HEXACHLOROBUTADIENE	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		IODOMETHANE (METHYL IODIDE)	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		ISOPROPYLBENZENE (CUMENE)	UG/KG											2.5 U	5.9 U	2 U	2.7 U	2.6
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG											5 U	12 U	4 U	5.5 U	5.2
		METHYL ACETATE	UG/KG											3 U	7.1 U	2.4 U	3.3 U	3.1
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG											12 U	30 U	9.9 U	14 U	13
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG											12 U	30 U	9.9 U	14 U	13

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			SDG	200-63532		200-63719		200-63720		200-63883			200-63885		SP2461				
			Location	SB08006		SB06010		SB09006		SB21001			SB16011		FIELDQC	SB08001		SB08006	
			Sample Date	5/19/2022		5/31/2022		6/4/2022		6/18/2022			6/17/2022		5/19/2022	5/19/2022		5/19/2022	
			Sample ID	LORNG_SB08006_0-1_05192022_E	LORNG_SB08006_8-10_05192022_E	LORNG_SB06010_0-1_05312022_E	LORNG_SB06010_5-6_05312022_E	LORNG_SB09006_0-1_06042022_E	LORNG_SB09006_8-10_06042022_E	LORNG_SB21001_0-1_06182022_E	LORNG_SB21001_0-1_06182022FD_E	LORNG_SB21001_2-3_06182022_E	LORNG_SB16011_0-1_06172022_E	LORNG_SB16011_8-10_06172022_E	LORNG_TB01_05192022	LORNG_SB08001_0-1_05192022_K	LORNG_SB08001_8-10_05192022_K	LORNG_SB08006_0-1_05192022_K	LORNG_SB08006_8-10_05192022_K
			QC Code	N	N	N	N	N	N	N	FD	N	N	N	TB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
VOCs	T	METHYLCYCLOHEXANE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		METHYLENE CHLORIDE	UG/KG												12 U	30 U	9.9 U	14 U	13
		NAPHTHALENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		N-BUTYLBENZENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		N-PROPYLBENZENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		SEC-BUTYLBENZENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		STYRENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		T-BUTYLBENZENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TERT-BUTYL METHYL ETHER	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TETRACHLOROETHYLENE(PCE)	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TOLUENE	UG/KG												18	5.9 U	2 U	7.7 U	2.6
		TRANS-1,2-DICHLOROETHENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TRANS-1,3-DICHLOROPROPENE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TRICHLOROETHYLENE (TCE)	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		TRICHLOROFLUOROMETHANE	UG/KG												5 U	12 U	4 U	5.5 U	5.2
		VINYL ACETATE	UG/KG												2.5 U	5.9 U	2 U	2.7 U	2.6
		VINYL CHLORIDE	UG/KG												5 U	12 U	4 U	5.5 U	5.2
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG															56 U	50
		2-METHYLNAPHTHALENE	UG/KG													12 U	9.8 U	11 U	25
		ACENAPHTHENE	UG/KG													12 U	9.8 U	11 U	70
		ACENAPHTHYLENE	UG/KG													12 U	9.8 U	11 U	9.9
		ANTHRACENE	UG/KG													12 U	4.3 J	11 U	80
		BENZO(A)ANTHRACENE	UG/KG													12 U	20 J	11 U	360
		BENZO(A)PYRENE	UG/KG													12 U	16 J	11 U	260
		BENZO(B)FLUORANTHENE	UG/KG													12 U	26	11 U	390
		BENZO(G,H,I)PERYLENE	UG/KG													12 U	13 J	11 U	170
		BENZO(K)FLUORANTHENE	UG/KG													12 U	9.2 J	11 U	140
		CHRYSENE	UG/KG													12 U	23 J	11 U	400
		DIBENZ(A,H)ANTHRACENE	UG/KG													12 UJ	9.8 UJ	11 UJ	27
		FLUORANTHENE	UG/KG													12 U	44	11 U	900
		FLUORENE	UG/KG													12 U	9.8 U	11 U	42
		INDENO(1,2,3-C,D)PYRENE	UG/KG													12 UJ	42 J	11 UJ	390
		NAPHTHALENE	UG/KG													12 U	9.8 U	11 U	23
		PENTACHLOROPHENOL	UG/KG													58 U	49 U	56 U	50
		PHENANTHRENE	UG/KG													12 U	26	11 U	460
		PYRENE	UG/KG													12 U	37 J	11 U	910
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG													290 U	240 U	280 U	240
		1,2-DICHLOROBENZENE	UG/KG													290 U	240 U	280 U	240
		1,2-DIPHENYLHYDRAZINE	UG/KG													580 U	490 U	550 U	490
		1,3-DICHLOROBENZENE	UG/KG													290 U	240 U	280 U	240
		1,4-DICHLOROBENZENE	UG/KG													290 U	240 U	280 U	240
		1-METHYLNAPHTHALENE	UG/KG													290 U	240 U	280 U	240
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG													290 U	240 U	280 U	240
		2,3,4,6-TETRACHLOROPHENOL	UG/KG													290 U	240 U	280 U	240
		2,4,5-TRICHLOROPHENOL	UG/KG													720 U	600 U	690 U	610
		2,4,6-TRICHLOROPHENOL	UG/KG													290 U	240 U	280 U	240
		2,4-DICHLOROPHENOL	UG/KG													290 U	240 U	280 U	240
		2,4-DIMETHYLPHENOL	UG/KG													290 U	240 U	280 U	240
		2,4-DINITROPHENOL	UG/KG													720 U	600 U	690 U	610
		2,4-DINITROTOLUENE	UG/KG													290 U	240 U	280 U	240
		2,6-DINITROTOLUENE	UG/KG													290 U	240 U	280 U	240
		2-CHLORONAPHTHALENE	UG/KG													290 U	240 U	280 U	240

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Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63532		200-63719		200-63720		200-63883			200-63885		SP2461				
			Location	SB08006		SB06010		SB09006		SB21001			SB16011		FIELDQC	SB08001		SB08006	
			Sample Date	5/19/2022		5/31/2022		6/4/2022		6/18/2022			6/17/2022		5/19/2022	5/19/2022		5/19/2022	
			Sample ID	LORNG_SB08006_0-1_05192022_E	LORNG_SB08006_8-10_05192022_E	LORNG_SB06010_0-1_05312022_E	LORNG_SB06010_5-6_05312022_E	LORNG_SB09006_0-1_06042022_E	LORNG_SB09006_8-10_06042022_E	LORNG_SB21001_0-1_06182022_E	LORNG_SB21001_0-1_06182022FD_E	LORNG_SB21001_2-3_06182022_E	LORNG_SB16011_0-1_06172022_E	LORNG_SB16011_8-10_06172022_E	LORNG_TB01_05192022	LORNG_SB08001_0-1_05192022_K	LORNG_SB08001_8-10_05192022_K	LORNG_SB08006_0-1_05192022_K	LORNG_SB08006_8-10_05192022_K
			QC Code	N	N	N	N	N	N	N	FD	N	N	N	TB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
SVOCs	T	2-CHLOROPHENOL	UG/KG													290 U	240 U	280 U	240
		2-METHYLPHENOL (O-CRESOL)	UG/KG													290 U	240 U	280 U	240
		2-NITROANILINE	UG/KG													720 U	600 U	690 U	610
		2-NITROPHENOL	UG/KG													290 U	240 U	280 U	240
		3,3'-DICHLOROBENZIDINE	UG/KG													290 U	240 U	280 U	240
		3-NITROANILINE	UG/KG													720 U	600 U	690 U	610
		4,6-DINITRO-2-METHYLPHENOL	UG/KG													720 U	600 U	690 U	610
		4-BROMOPHENYL PHENYL ETHER	UG/KG													290 U	240 U	280 U	240
		4-CHLORO-3-METHYLPHENOL	UG/KG													290 U	240 U	280 U	240
		4-CHLOROANILINE	UG/KG													290 U	240 U	280 U	240
		4-CHLOROPHENYL PHENYL ETHER	UG/KG													290 U	240 U	280 U	240
		4-NITROANILINE	UG/KG													720 U	600 U	690 U	610
		4-NITROPHENOL	UG/KG													720 U	600 U	690 U	610
		BENZALDEHYDE	UG/KG													290 U	240 U	280 U	240
		BENZIDINE	UG/KG													1300 U	1100 U	1200 U	1100
		BENZOIC ACID	UG/KG													720 R	600 R	690 R	610
		BENZYL ALCOHOL	UG/KG													580 U	490 U	550 U	490
		BENZYL BUTYL PHTHALATE	UG/KG													290 U	240 U	280 U	240
		BIPHENYL (DIPHENYL)	UG/KG													290 U	240 U	280 U	240
		BIS(2-CHLOROETHOXY) METHANE	UG/KG													290 U	240 U	280 U	240
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG													290 U	240 U	280 U	240
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG													290 U	240 U	280 U	240
		CARBAZOLE	UG/KG													290 U	240 U	280 U	240
		CRESOLS, M & P	UG/KG													290 U	240 U	280 U	240
		DIBENZOFURAN	UG/KG													290 U	240 U	280 U	240
		DIETHYL PHTHALATE	UG/KG													290 U	240 U	280 U	240
		DIMETHYL PHTHALATE	UG/KG													290 U	240 U	280 U	240
		DI-N-BUTYL PHTHALATE	UG/KG													290 U	240 U	280 U	240
		DI-N-OCTYLPHTHALATE	UG/KG													290 U	240 U	280 U	240
		HEXACHLOROBENZENE	UG/KG													290 U	240 U	280 U	240
		HEXACHLOROBUTADIENE	UG/KG													290 U	240 U	280 U	240
		HEXACHLOROCYCLOPENTADIENE	UG/KG													290 U	240 U	280 U	240
		HEXACHLOROETHANE	UG/KG													290 U	240 U	280 U	240
		ISOPHORONE	UG/KG													290 U	240 U	280 U	240
		NITROBENZENE	UG/KG													290 U	240 U	280 U	240
		N-NITROSODIMETHYLAMINE	UG/KG													290 U	240 U	280 U	240
		N-NITROSODI-N-PROPYLAMINE	UG/KG													290 U	240 U	280 U	240
		N-NITROSODIPHENYLAMINE	UG/KG													290 U	240 U	280 U	240
		PHENOL	UG/KG													290 U	240 U	280 U	240
PCBs	T	PCB, TOTAL	UG/KG															81 U	77
		PCB-1016 (AROCLOR 1016)	UG/KG															8.8 U	8.4
		PCB-1221 (AROCLOR 1221)	UG/KG															8.8 U	8.4
		PCB-1232 (AROCLOR 1232)	UG/KG															10 U	9.9
		PCB-1242 (AROCLOR 1242)	UG/KG															8.8 U	8.4
		PCB-1248 (AROCLOR 1248)	UG/KG															8.8 U	8.4
		PCB-1254 (AROCLOR 1254)	UG/KG															8.8 UJ	8.4
		PCB-1260 (AROCLOR 1260)	UG/KG															8.8 UJ	8.4
		PCB-1262 (AROCLOR 1262)	UG/KG															8.8 UJ	8.4
		PCB-1268 (AROCLOR 1268)	UG/KG															8.8 UJ	8.4

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63532		200-63719		200-63720		200-63883			200-63885		SP2461			
			Location	SB08006		SB06010		SB09006		SB21001			SB16011		FIELDQC	SB08001		SB08006	
			Sample Date	5/19/2022		5/31/2022		6/4/2022		6/18/2022			6/17/2022		5/19/2022	5/19/2022		5/19/2022	
			Sample ID	LORNG_SB08006_0-1_05192022_E	LORNG_SB08006_8-10_05192022_E	LORNG_SB06010_0-1_05312022_E	LORNG_SB06010_5-6_05312022_E	LORNG_SB09006_0-1_06042022_E	LORNG_SB09006_8-10_06042022_E	LORNG_SB21001_0-1_06182022_E	LORNG_SB21001_0-1_06182022FD_E	LORNG_SB21001_2-3_06182022_E	LORNG_SB16011_0-1_06172022_E	LORNG_SB16011_8-10_06172022_E	LORNG_TB01_05192022	LORNG_SB08001_0-1_05192022_K	LORNG_SB08001_8-10_05192022_K	LORNG_SB08006_0-1_05192022_K	LORNG_SB08006_8-10_05192022_K
			QC Code	N	N	N	N	N	N	N	FD	N	N	N	TB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
Pesticides	T	ALDRIN	UG/KG															0.88 U	0.84
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG															0.88 U	0.84
		ALPHA ENDOSULFAN	UG/KG															0.88 U	0.84
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG															0.88 U	0.84
		BETA ENDOSULFAN	UG/KG															1.7 U	1.6
		CIS-CHLORDANE	UG/KG															0.88 U	0.84
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG															0.88 U	0.84
		DIELDRIN	UG/KG															1.7 U	1.6
		ENDOSULFAN SULFATE	UG/KG															1.7 U	1.6
		ENDRIN	UG/KG															1.7 U	1.6
		ENDRIN ALDEHYDE	UG/KG															1.7 U	1.6
		ENDRIN KETONE	UG/KG															1.7 U	1.6
		GAMMA BHC (LINDANE)	UG/KG															0.88 U	0.84
		GAMMA-CHLORDANE	UG/KG															0.88 U	0.84
		HEPTACHLOR	UG/KG															0.88 U	0.84
		HEPTACHLOR EPOXIDE	UG/KG															0.88 U	0.84
		METHOXYCHLOR	UG/KG															8.8 UJ	8.4
		P,P'-DDD	UG/KG															1.5 J	1.6
		P,P'-DDE	UG/KG															20	1.6
		P,P'-DDT	UG/KG															25 J	1.6
		TOXAPHENE	UG/KG															17 U	16
Metals	T	ALUMINUM	MG/KG													19300	16800	15400	20000
		ANTIMONY	MG/KG													0.65 UJ	0.54 J	0.9 U	0.78
		ARSENIC	MG/KG													10.5 J	8.29 J	45.8 J	7.96
		BARIUM	MG/KG													44.4 J	43.5	145	68.7
		BERYLLIUM	MG/KG													0.551 J	0.544	0.515	0.667
		CADMIUM	MG/KG													0.051 J	0.92 U	0.095 J	0.47
		CALCIUM	MG/KG													2160 J	11600	13300	29800
		CHROMIUM, TOTAL	MG/KG													31.9 J	35.8	35.3	35.2
		COBALT	MG/KG													12.9 J	14.4 J	10.2 J	14.4
		COPPER	MG/KG													26.9 J	23.4	23	20.6
		IRON	MG/KG													30400	32300	27900	32300
		LEAD	MG/KG													17.1 J	13	112	12.7
		MAGNESIUM	MG/KG													8110	9480	7400	9790
		MANGANESE	MG/KG													527 J	619	596	608
		MERCURY	MG/KG													0.052	0.027 J	0.0701	0.032
		NICKEL	MG/KG													41.8 J	49.1	33.6	49
		POTASSIUM	MG/KG													1140 J	1160	1140	2160
		SELENIUM	MG/KG													0.91 U	0.55 J	1.2 U	1.1
		SILVER	MG/KG													0.14 J	1.2 J	0.565 J	0.22
		SODIUM	MG/KG													20.6 J	34.6 J	44.5 J	68.4
		THALLIUM	MG/KG													0.65 U	1.5 U	0.9 U	0.78
		VANADIUM	MG/KG													25.8 J	24.2	33.1	25.5
		ZINC	MG/KG													70.1 J	65	82.6	66.9
WetChem	T	SOLIDS, PERCENT	PERCENT	82.5	89.7	67.9	82.9	94.6	89.5	76.9	72.8	85	81.1	87.5		79	90	88	90
		TOTAL ORGANIC CARBON	MG/KG																
			UG/G															51,000	2,000
Perchlorate	T	PERCHLORATE	UG/KG	0.47 U	0.43 U	0.57 U	0.47 U	0.42 U	0.44 U	0.5 U	0.54 U	0.44 U	0.48 U	0.44 U					

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Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2522			SP2566					SP2692			SP2721			
		Location		FIELDQC	SB11002		FIELDQC	SB13008		SB13017		FIELDQC	SB06010		FIELDQC	SB13018		
		Sample Date		5/23/2022	5/22/2022		5/25/2022	5/24/2022		5/24/2022		5/31/2022	5/31/2022		6/1/2022	6/1/2022		
		Sample ID	08006_8- 2022_K	LORNG_TB02_052320 22	LORNG_SB11002_0- 1_05222022_K	LORNG_SB11002_8- 10_05222022_K	LORNG_TB03_052520 22	LORNG_SB13008_0- 1_05242022_K	LORNG_SB13008_8- 10_05242022_K	LORNG_SB13017_0- 1_05242022_K	LORNG_SB13017_8- 10_05242022_K	LORNG_TB04_0531 2022	LORNG_SB06010_0- 1_05312022_K	LORNG_SB06010_5- 6_05312022_K	LORNG_TB05_0601 2022	LORNG_SB13018_0- 1_06012022_K	LORNG_SB13018_8- 10_06012022_K	LORNG_S 10_0601
		QC Code		TB	N	N	TB	N	N	N	N	TB	N	N	TB	N	N	F
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1,1-TRICHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1,2,2-TETRACHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1,2-TRICHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1-DICHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1-DICHLOROETHENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,1-DICHLOROPROPENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2,3-TRICHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2,3-TRICHLOROPROPANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2,4-TRICHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2,4-TRIMETHYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	250 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2-DICHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2-DICHLOROETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,2-DICHLOROPROPANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	51 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	89 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,3-DICHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,3-DICHLOROPROPANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		1,4-DICHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		2,2-DICHLOROPROPANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		2-CHLOROTOLUENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		2-HEXANONE	UG/KG	U	12 U	16 U	10 U	12 U	11 U	12 UJ	17 U	10 U	12 U	17 U	12 U	12 U	8.8 U	12 U	10
		4-CHLOROTOLUENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		ACETONE	UG/KG	U	12 U	16 U	10 U	5.5 J	11 U	3600 J	17 U	10 U	12 U	17 U	16 J	12 U	8.8 U	12 U	10
		BENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.4 J	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		BROMOBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		BROMOCHLOROMETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		BROMODICHLOROMETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		BROMOFORM	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		BROMOMETHANE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		CARBON DISULFIDE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		CARBON TETRACHLORIDE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		CHLOROBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		CHLOROETHANE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		CHLOROFORM	UG/KG	U	0.8 J	3.2 U	2.1 U	0.9 J	2.2 U	2.4 UJ	3.4 U	2.1 U	0.67 J	3.3 U	2.5 U	0.57 J	1.8 U	2.3 U	2
		CHLOROMETHANE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		CIS-1,2-DICHLOROETHYLENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		CIS-1,3-DICHLOROPROPENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		CYCLOHEXANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	1900 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		DIBROMOCHLOROMETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		DIBROMOMETHANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		DICHLORODIFLUOROMETHANE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		ETHYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	180 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		HEXACHLOROBUTADIENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		IODOMETHANE (METHYL IODIDE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		ISOPROPYLBENZENE (CUMENE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	300 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	230 J	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		METHYL ACETATE	UG/KG	U	3 U	3.8 U	2.5 U	3 U	2.7 U	2.9 UJ	4.1 U	2.5 U	3 U	4 U	3 U	3 U	2.1 U	2.8 U	2.5
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG	U	12 U	16 U	10 U	12 U	11 U	12 UJ	17 U	10 U	12 U	17 U	12 U	12 U	8.8 U	12 U	10
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG	U	12 U	16 U	10 U	12 U	11 U	12 UJ	17 U	10 U	12 U	17 U	12 U	12 U	8.8 U	12 U	10

Prepared by: AKN
Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2522			SP2566					SP2692			SP2721			
		Location		FIELDQC	SB11002		FIELDQC	SB13008		SB13017		FIELDQC	SB06010		FIELDQC	SB13018		
		Sample Date		5/23/2022	5/22/2022		5/25/2022	5/24/2022		5/24/2022		5/31/2022	5/31/2022		6/1/2022	6/1/2022		
		Sample ID	08006_8-2022_K	LORNG_TB02_05232022	LORNG_SB11002_0-1_05222022_K	LORNG_SB11002_8-10_05222022_K	LORNG_TB03_05252022	LORNG_SB13008_0-1_05242022_K	LORNG_SB13008_8-10_05242022_K	LORNG_SB13017_0-1_05242022_K	LORNG_SB13017_8-10_05242022_K	LORNG_TB04_05312022	LORNG_SB06010_0-1_05312022_K	LORNG_SB06010_5-6_05312022_K	LORNG_TB05_06012022	LORNG_SB13018_0-1_06012022_K	LORNG_SB13018_8-10_06012022_K	LORNG_S 10_0601
		QC Code		TB	N	N	TB	N	N	N	N	TB	N	N	TB	N	N	F
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
VOCs	T	METHYLCYCLOHEXANE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	120 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		METHYLENE CHLORIDE	UG/KG	U	12 U	16 U	10 U	12 U	11 U	12 UJ	17 U	10 U	12 U	17 U	12 U	12 U	8.8 U	12 U	10
		NAPHTHALENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	6.7 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		N-BUTYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	200 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		N-PROPYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	330 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	310 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		SEC-BUTYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	230 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		STYRENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		T-BUTYLBENZENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TERT-BUTYL METHYL ETHER	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TETRACHLOROETHYLENE(PCE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TOLUENE	UG/KG	U	2.5 U	3.2 U	2.5 J	30	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	1.2
		TRANS-1,2-DICHLOROETHENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TRANS-1,3-DICHLOROPROPENE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TRICHLOROETHYLENE (TCE)	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	47 J	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		TRICHLOROFLUOROMETHANE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
		VINYL ACETATE	UG/KG	U	2.5 U	3.2 U	2.1 U	2.5 U	2.2 U	2.4 UJ	3.4 U	2.1 U	2.5 U	3.3 U	2.5 U	2.5 U	1.8 U	2.3 U	2
		VINYL CHLORIDE	UG/KG	U	5 U	6.4 U	4.2 U	5 U	4.5 U	4.8 UJ	6.8 U	4.2 U	5 U	6.7 U	5 U	5 U	3.5 U	4.7 U	4.1
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG	U															
		2-METHYLNAPHTHALENE	UG/KG			38	10 U		5.7 J	32	6.4 J	11 U		6.7 J	11 U		10 U	10 U	
		ACENAPHTHENE	UG/KG			170	10 U		52	10 U	74	11 U		49	11 U		6.5 J	10 U	
		ACENAPHTHYLENE	UG/KG	U		4.9 J	10 U		10 U	10 U	2.3 J	11 U		4.8 J	11 U		10 U	10 U	
		ANTHRACENE	UG/KG			360	10 U		110	10 U	160	11 U		110	11 U		20 J	10 U	
		BENZO(A)ANTHRACENE	UG/KG			2200	10 U		620	10 U	680	11 U		850	6.7 J		110	10 U	
		BENZO(A)PYRENE	UG/KG			1400 J	10 UJ		420	10 U	500	11 U		850	5.7 J		95	10 U	
		BENZO(B)FLUORANTHENE	UG/KG			2100	10 U		960	10 U	950	11 U		1600	12 J		160	10 U	
		BENZO(G,H,I)PERYLENE	UG/KG			780	10 U		300	10 U	330	11 U		510	4.7 J		70	10 U	
		BENZO(K)FLUORANTHENE	UG/KG			540 J	10 UJ		250 J	10 U	250 J	11 U		430 J	11 U		49	10 U	
		CHRYSENE	UG/KG	J		2200	10 U		630	2.1 J	680	11 U		950	8 J		110	10 U	
		DIBENZ(A,H)ANTHRACENE	UG/KG	J		150	10 U		85	10 U	100	11 U		140	11 U		19 J	10 U	
		FLUORANTHENE	UG/KG			4400	10 U		1800	2 J	2000	11 U		2400	14 J		220	10 U	
		FLUORENE	UG/KG			260	10 U		53	10 U	76	11 U		46	11 U		6.9 J	10 U	
		INDENO(1,2,3-C,D)PYRENE	UG/KG	J		11 U	10 U		640	10 U	630	11 U		1100	7.2 J		130	10 U	
		NAPHTHALENE	UG/KG			51	10 U		10 U	15 J	11 U	11 U		14 U	11 U		10 U	10 U	
		PENTACHLOROPHENOL	UG/KG	U		56 U	53 U		52 U	51 U	54 U	56 U		71 U	57 U		50 U	53 U	
		PHENANTHRENE	UG/KG			3200	10 U		860	2.2 J	1000	11 U		710	4.5 J		100	10 U	
		PYRENE	UG/KG	J		4300	10 U		860	10 U	920	11 U		1400	11 J		180	10 U	
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		1,2-DICHLOROBENZENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		1,2-DIPHENYLHYDRAZINE	UG/KG	U		550 U	520 U		510 U	510 U	540 U	550 U		700 U	570 U		500 U	520 U	
		1,3-DICHLOROBENZENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		1,4-DICHLOROBENZENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		1-METHYLNAPHTHALENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,3,4,6-TETRACHLOROPHENOL	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,4,5-TRICHLOROPHENOL	UG/KG	U		690 U	650 U		640 U	630 U	660 U	690 U		880 U	700 U		620 U	650 U	
		2,4,6-TRICHLOROPHENOL	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,4-DICHLOROPHENOL	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,4-DIMETHYLPHENOL	UG/KG	U		280 UJ	260 UJ		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,4-DINITROPHENOL	UG/KG	U		690 U	650 U		640 U	630 U	660 U	690 U		880 U	700 U		620 U	650 U	
		2,4-DINITROTOLUENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2,6-DINITROTOLUENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	
		2-CHLORONAPHTHALENE	UG/KG	U		280 U	260 U		260 U	250 U	270 U	280 U		350 U	280 U		250 U	260 U	

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Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG			SP2522				SP2566						SP2692				SP2721					
		Location			FIELDQC		SB11002		FIELDQC		SB13008		SB13017		FIELDQC		SB06010		FIELDQC		SB13018			
		Sample Date			5/23/2022		5/22/2022		5/25/2022		5/24/2022		5/24/2022		5/31/2022		5/31/2022		6/1/2022		6/1/2022			
		Sample ID	08006_8-2022_K		LORNG_TB02_05232022		LORNG_SB11002_0-1_05222022_K	LORNG_SB11002_8-10_05222022_K	LORNG_TB03_05252022		LORNG_SB13008_0-1_05242022_K	LORNG_SB13008_8-10_05242022_K	LORNG_SB13017_0-1_05242022_K	LORNG_SB13017_8-10_05242022_K	LORNG_TB04_05312022		LORNG_SB06010_0-1_05312022_K	LORNG_SB06010_5-6_05312022_K	LORNG_TB05_06012022		LORNG_SB13018_0-1_06012022_K	LORNG_SB13018_8-10_06012022_K	LORNG_S 10_0601	
		QC Code			TB		N	N	TB		N	N	N	N	TB		N	N	TB		N	N	F	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result	
SVOCs	T	2-CHLOROPHENOL	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		2-METHYLPHENOL (O-CRESOL)	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		2-NITROANILINE	UG/KG	U			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		2-NITROPHENOL	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		3,3'-DICHLOROBENZIDINE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		3-NITROANILINE	UG/KG	U			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		4,6-DINITRO-2-METHYLPHENOL	UG/KG	U			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		4-BROMOPHENYL PHENYL ETHER	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		4-CHLORO-3-METHYLPHENOL	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		4-CHLOROANILINE	UG/KG	U			280 UJ	260 UJ			260 UJ	250 UJ	270 UJ	280 UJ			350 UJ	280 UJ			250 UJ	260 UJ		
		4-CHLOROPHENYL PHENYL ETHER	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		4-NITROANILINE	UG/KG	U			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		4-NITROPHENOL	UG/KG	U			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		BENZALDEHYDE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		BENZIDINE	UG/KG	U			1200 R	1200 R			1200 R	1200 R	1200 R	1300 R			1600 R	1300 R			1100 R	1200 R		
		BENZOIC ACID	UG/KG	R			690 U	650 U			640 U	630 U	660 U	690 U			880 U	700 U			620 U	650 U		
		BENZYL ALCOHOL	UG/KG	U			550 U	520 U			510 U	510 U	540 U	550 U			700 U	570 U			500 U	520 U		
		BENZYL BUTYL PHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		BIPHENYL (DIPHENYL)	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		BIS(2-CHLOROETHOXY) METHANE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		CARBAZOLE	UG/KG	U			330 J	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		CRESOLS, M & P	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		DIBENZOFURAN	UG/KG	U			180 J	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		DIETHYL PHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		DIMETHYL PHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		DI-N-BUTYL PHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		DI-N-OCTYLPHTHALATE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		HEXACHLOROBENZENE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		HEXACHLOROBUTADIENE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		HEXACHLOROCYCLOPENTADIENE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		HEXACHLOROETHANE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		ISOPHORONE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		NITROBENZENE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		N-NITROSODIMETHYLAMINE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		N-NITROSODI-N-PROPYLAMINE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		N-NITROSODIPHENYLAMINE	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
		PHENOL	UG/KG	U			280 U	260 U			260 U	250 U	270 U	280 U			350 U	280 U			250 U	260 U		
PCBs	T	PCB, TOTAL	UG/KG	UJ													78 J	85 U						
		PCB-1016 (AROCLOR 1016)	UG/KG	UJ													12 U	9.3 U						
		PCB-1221 (AROCLOR 1221)	UG/KG	UJ													12 U	9.3 U						
		PCB-1232 (AROCLOR 1232)	UG/KG	UJ													14 U	11 U						
		PCB-1242 (AROCLOR 1242)	UG/KG	UJ													12 U	9.3 U						
		PCB-1248 (AROCLOR 1248)	UG/KG	UJ													12 U	9.3 U						
		PCB-1254 (AROCLOR 1254)	UG/KG	UJ													12 U	9.3 U						
		PCB-1260 (AROCLOR 1260)	UG/KG	UJ													78	9.3 U						
		PCB-1262 (AROCLOR 1262)	UG/KG	UJ													12 U	9.3 U						
		PCB-1268 (AROCLOR 1268)	UG/KG	UJ													12 U	9.3 U						

Prepared by: AKN
Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2522				SP2566					SP2692			SP2721			
		Location		FIELDQC	SB11002			FIELDQC	SB13008		SB13017		FIELDQC	SB06010		FIELDQC	SB13018		
		Sample Date		5/23/2022	5/22/2022			5/25/2022	5/24/2022		5/24/2022		5/31/2022	5/31/2022		6/1/2022	6/1/2022		
		Sample ID	08006_8-2022_K	LORNG_TB02_05232022	LORNG_SB11002_0-1_05222022_K	LORNG_SB11002_8-10_05222022_K		LORNG_TB03_05252022	LORNG_SB13008_0-1_05242022_K	LORNG_SB13008_8-10_05242022_K	LORNG_SB13017_0-1_05242022_K	LORNG_SB13017_8-10_05242022_K	LORNG_TB04_05312022	LORNG_SB06010_0-1_05312022_K	LORNG_SB06010_5-6_05312022_K	LORNG_TB05_06012022	LORNG_SB13018_0-1_06012022_K	LORNG_SB13018_8-10_06012022_K	LORNG_S 10_0601
		QC Code		TB	N	N		TB	N	N	N	N	TB	N	N	TB	N	N	F
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
Pesticides	T	ALDRIN	UG/KG	UJ										1.2 U	0.93 U				
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG	UJ										1.2 U	0.93 U				
		ALPHA ENDOSULFAN	UG/KG	UJ										1.2 U	0.93 U				
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG	UJ										1.2 U	0.93 U				
		BETA ENDOSULFAN	UG/KG	UJ										2.3 U	1.8 U				
		CIS-CHLORDANE	UG/KG	UJ										1.2 U	0.93 U				
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG	UJ										1.2 U	0.93 U				
		DIELDRIN	UG/KG	UJ										2.3 U	1.8 U				
		ENDOSULFAN SULFATE	UG/KG	UJ										2.3 U	1.8 U				
		ENDRIN	UG/KG	UJ										2.3 U	1.8 U				
		ENDRIN ALDEHYDE	UG/KG	UJ										2.3 U	1.8 U				
		ENDRIN KETONE	UG/KG	UJ										2.3 U	1.8 U				
		GAMMA BHC (LINDANE)	UG/KG	UJ										1.2 U	0.93 U				
		GAMMA-CHLORDANE	UG/KG	UJ										1.2 U	0.93 U				
		HEPTACHLOR	UG/KG	UJ										1.2 U	0.93 U				
		HEPTACHLOR EPOXIDE	UG/KG	UJ										1.2 U	0.93 U				
		METHOXYCHLOR	UG/KG	UJ										12 U	9.3 U				
		P,P'-DDD	UG/KG	UJ										13	11				
		P,P'-DDE	UG/KG	UJ										14	2.9 J				
		P,P'-DDT	UG/KG	UJ										18	2.1 J				
		TOXAPHENE	UG/KG	UJ										23 U	18 U				
Metals	T	ALUMINUM	MG/KG			15400	16600		17500	15600	16400	16400		21700	16900		17800	17800	
		ANTIMONY	MG/KG	U		1.2 J	2 U		0.99 UJ	0.77 U	0.82 U	0.81 U		1.1 U	1 U		0.83 U	0.96 U	
		ARSENIC	MG/KG	J		16	7.43		7.46 J	7.08	7.54	6.14		8.74	7.43		7.21	7.81	
		BARIUM	MG/KG			108	48.2		72.8 J	62.8	65.7	48.6		81.4	60.1		70.6	65.6	
		BERYLLIUM	MG/KG			0.629 J	0.466		0.57	0.596	0.729	0.571		0.753	0.645		0.61	0.633	
		CADMIUM	MG/KG	U		1.36 J	0.084 J		0.59 U	0.46 U	0.49 U	0.49 U		0.66 U	0.61 U		0.5 U	0.58 U	
		CALCIUM	MG/KG			15200	4810		12100	5780	4870	1900		3050	2400		2610	13200	
		CHROMIUM, TOTAL	MG/KG			78.2	35.3		37.6 J	34.6	39	36.8		42.2	36.9		36	37.6	
		COBALT	MG/KG	J		17.8	13.5		12.9	13.1	13	12.8		14.1	11.9		13.1	13	
		COPPER	MG/KG			57.2	18.7		22.7 J	23	26.6	18.6		35.4	26.2		22.4	22.3	
		IRON	MG/KG			123000	31400		31700	31200	34600	30200		35800	30300		31800	32500	
		LEAD	MG/KG			85.7	14.8		38 J	13.3	36.4	11.4		79.7	19.6		16.9	13.2	
		MAGNESIUM	MG/KG			7770	8950		8420	7900	7870	8580		8580	7720		7920	8770	
		MANGANESE	MG/KG			1060	489		471	559	684	555		725	450		656	577	
		MERCURY	MG/KG	J		0.043	0.025 J		0.038	0.013 J	0.046	0.033		0.0907	0.04		0.04	0.026 J	
		NICKEL	MG/KG			85	48.5		43.8 J	44.1	44.3	43.3		48.8	41.4		45.2	46.8	
		POTASSIUM	MG/KG			1400	1300 J		1420 J	1520	1390	1190		1890	1770		1750	2150	
		SELENIUM	MG/KG	U		6.4 U	2.7 U		1.4 U	1.1 U	1.1 U	1.1 U		0.48 J	1.4 U		1.2 U	1.3 U	
		SILVER	MG/KG	J		1.6 J	0.98 J		0.604 J	0.34 J	0.43 J	0.3 J		0.823 J	0.582 J		0.689 J	0.46 J	
		SODIUM	MG/KG	J		79.4 J	60.8		59.2 U	53.6 U	59.1 U	43.3 U		63 J	57.4 J		55.4 J	63 J	
		THALLIUM	MG/KG	U		4.5 U	2 U		0.24 J	0.77 U	0.22 J	0.81 U		0.31 J	0.26 J		0.22 J	0.36 J	
		VANADIUM	MG/KG			28.7	21.2		25.6 J	25.1	28.2	21.8		49.5	27.7		25.5	26.7	
		ZINC	MG/KG			80.5	62.9		73.1 J	65.7	78.7	59.6		141	72.9		68.9	69.9	
WetChem	T	SOLIDS, PERCENT	PERCENT			81	90		84	90	88	88		67	85		91	90	90
		TOTAL ORGANIC CARBON	MG/KG																
			UG/G																
Perchlorate	T	PERCHLORATE	UG/KG																

Prepared by: AKN
Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2809			SP2868								SP3101	
		Location		FIELDQC	SB09006		FIELDQC	SB01009		SB01014		SB01016			FIELDQC	SB1
		Sample Date		6/6/2022	6/4/2022		6/8/2022	6/7/2022		6/6/2022		6/7/2022			6/17/2022	6/17
		Sample ID	B13018_8-2022FDK	LORNG_TB06_06062022	LORNG_SB09006_0-1_06042022_K	LORNG_SB09006_8-10_06042022_K	LORNG_TB07_06082022	LORNG_SB01009-0-1_06072022_K	LORNG_SB01009-8-10_06072022_K	LORNG_SB01014-0-1_06062022_K	LORNG_SB01014-5-7_06062022_K	LORNG_SB01016-0-1_06072022_K	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	LORNG_TB08_06172022	LORNG_SB16006_0-1_06172022_K
		QC Code	D	TB	N	N	TB	N	N	N	N	N	N	FD	TB	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1,1-TRICHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1,2,2-TETRACHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 U	3.3 U	2.5 U	2.6 UJ
		1,1,2-TRICHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1-DICHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1-DICHLOROETHENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,1-DICHLOROPROPENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2,3-TRICHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2,3-TRICHLOROPROPANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2,4-TRICHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2,4-TRIMETHYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2-DICHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2-DICHLOROETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,2-DICHLOROPROPANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,3-DICHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,3-DICHLOROPROPANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		1,4-DICHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		2,2-DICHLOROPROPANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		2-CHLOROTOLUENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		2-HEXANONE	UG/KG	U	12 U	8 UJ	5 U	12 U	13 U	6.2 U	11 U	8.6 U	18 U	11 UJ	16 UJ	12 U	13 UJ
		4-CHLOROTOLUENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		ACETONE	UG/KG	U	12 U	8 UJ	5 U	12 U	13 U	6.2 U	83	18	47	34 J	63 J	12 U	23 J
		BENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		BROMOBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		BROMOCHLOROMETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	5.4	2.6 UJ
		BROMODICHLOROMETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		BROMOFORM	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		BROMOMETHANE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
		CARBON DISULFIDE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 U	3.3 U	2.5 U	2.6 UJ
		CARBON TETRACHLORIDE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		CHLOROBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		CHLOROETHANE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
		CHLOROFORM	UG/KG	U	0.64 J	1.6 UJ	1 U	0.56 J	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	0.95 J	2.6 UJ
		CHLOROMETHANE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
		CIS-1,2-DICHLOROETHYLENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		CIS-1,3-DICHLOROPROPENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		CYCLOHEXANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 U	3.3 U	2.5 U	2.6 UJ
		DIBROMOCHLOROMETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		DIBROMOMETHANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		DICHLORODIFLUOROMETHANE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
		ETHYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		HEXACHLOROBUTADIENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		IODOMETHANE (METHYL IODIDE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		ISOPROPYLBENZENE (CUMENE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 UJ	6.5 UJ	5 U	5.2 UJ
		METHYL ACETATE	UG/KG	U	3 U	1.9 UJ	1.2 U	3 U	3.2 U	1.5 U	2.7 U	2.1 U	4.4 U	2.7 U	3.9 U	3 U	3.1 UJ
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG	U	12 U	8 UJ	5 U	12 U	13 U	6.2 U	11 U	8.6 U	18 J	11 U	9.2 J	12 U	13 UJ
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG	U	12 U	8 UJ	5 U	12 U	13 U	6.2 U	11 U	8.6 U	18 U	11 UJ	16 UJ	12 U	13 UJ

Prepared by: AKN
Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2809			SP2868								SP3101	
		Location		FIELDQC	SB09006		FIELDQC	SB01009		SB01014	SB01016				FIELDQC	SB1
		Sample Date		6/6/2022	6/4/2022		6/8/2022	6/7/2022		6/6/2022	6/7/2022				6/17/2022	6/17/
		Sample ID	B13018_8-2022FDK	LORNG_TB06_06062022	LORNG_SB09006_0-1_06042022_K	LORNG_SB09006_8-10_06042022_K	LORNG_TB07_06082022	LORNG_SB01009-0-1_06072022_K	LORNG_SB01009-8-10_06072022_K	LORNG_SB01014-0-1_06062022_K	LORNG_SB01014-5-7_06062022_K	LORNG_SB01016-0-1_06072022_K	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	LORNG_TB08_06172022	LORNG_SB16006_0-1_06172022_K
		QC Code	D	TB	N	N	TB	N	N	N	N	N	N	FD	TB	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	METHYLCYCLOHEXANE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		METHYLENE CHLORIDE	UG/KG	U	12 U	8 UJ	5 U	12 U	13 U	6.2 U	11 U	8.6 U	18 U	11 UJ	16 UJ	2700	140 UJ
		NAPHTHALENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		N-BUTYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		N-PROPYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		SEC-BUTYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		STYRENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		T-BUTYLBENZENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TERT-BUTYL METHYL ETHER	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TETRACHLOROETHYLENE(PCE)	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TOLUENE	UG/KG	J	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	0.76 J	2.2 U	5.8	3.6 U	2.5 J	3.3 UJ	11	2.6 UJ
		TRANS-1,2-DICHLOROETHENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TRANS-1,3-DICHLOROPROPENE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TRICHLOROETHYLENE (TCE)	UG/KG	U	2.5 U	1.6 UJ	9.8	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 UJ	3.3 UJ	2.5 U	2.6 UJ
		TRICHLOROFLUOROMETHANE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
		VINYL ACETATE	UG/KG	U	2.5 U	1.6 UJ	1 U	2.5 U	2.6 U	1.2 U	2.2 U	1.7 U	3.6 U	2.3 R	3.3 R	2.5 U	2.6 UJ
		VINYL CHLORIDE	UG/KG	U	5 U	3.2 UJ	2 U	5 U	5.3 U	2.5 U	4.5 U	3.5 U	7.3 U	4.5 U	6.5 U	5 U	5.2 UJ
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG			48 UJ	51 UJ						70 UJ	57 UJ	55 UJ		
		2-METHYLNAPHTHALENE	UG/KG			9.6 U	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		ACENAPHTHENE	UG/KG			6.1 J	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		ACENAPHTHYLENE	UG/KG			9.6 U	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		ANTHRACENE	UG/KG			12 J	10 U		12 U	11 U	11 U	12 U	14 U	11 UJ	11 UJ		11 U
		BENZO(A)ANTHRACENE	UG/KG			120	10 U		12 U	11 U	11 U	12 U	5.8 J	11 U	11 U		11 U
		BENZO(A)PYRENE	UG/KG			130	10 U		12 U	11 U	11 U	12 U	5.5 J	11 UJ	11 UJ		11 U
		BENZO(B)FLUORANTHENE	UG/KG			210	10 U		12 U	11 U	11 U	12 U	9.3 J	11 U	11 U		5.8 J
		BENZO(G,H,I)PERYLENE	UG/KG			130	10 U		12 U	11 U	11 U	12 U	4.1 J	11 U	11 U		3.4 J
		BENZO(K)FLUORANTHENE	UG/KG			57	10 U		12 U	11 U	11 U	12 U	14 U	11 UJ	11 UJ		11 UJ
		CHRYSENE	UG/KG			120	10 U		12 U	11 U	11 U	12 U	7.9 J	11 UJ	11 UJ		3.6 J
		DIBENZ(A,H)ANTHRACENE	UG/KG			24	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		FLUORANTHENE	UG/KG			160	10 U		12 U	11 U	11 U	12 U	14 J	11 U	11 U		2.9 J
		FLUORENE	UG/KG			4.1 J	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		INDENO(1,2,3-C,D)PYRENE	UG/KG			210	10 U		12 U	11 U	11 U	12 U	7.3 J	11 U	11 U		6.5 J
		NAPHTHALENE	UG/KG			9.6 U	10 U		12 U	11 U	11 U	12 U	14 U	11 U	11 U		11 U
		PENTACHLOROPHENOL	UG/KG			48 U	51 U		58 U	56 U	56 U	60 U	70 U	57 U	55 U		55 U
		PHENANTHRENE	UG/KG			66	10 U		12 U	11 U	11 U	12 U	8 J	11 U	11 U		2.4 J
		PYRENE	UG/KG			210	10 U		12 U	11 U	11 U	12 U	14 J	11 U	11 U		2.7 J
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		1,2-DICHLOROBENZENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		1,2-DIPHENYLHYDRAZINE	UG/KG			480 U	510 UJ		580 U	550 U	550 U	590 U	690 U	570 U	550 UJ		500 U
		1,3-DICHLOROBENZENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		1,4-DICHLOROBENZENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		1-METHYLNAPHTHALENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,3,4,6-TETRACHLOROPHENOL	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,4,5-TRICHLOROPHENOL	UG/KG			590 U	630 UJ		720 U	690 U	690 U	730 U	860 U	700 U	680 UJ		620 U
		2,4,6-TRICHLOROPHENOL	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,4-DICHLOROPHENOL	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,4-DIMETHYLPHENOL	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,4-DINITROPHENOL	UG/KG			590 U	630 UJ		720 U	690 U	690 U	730 U	860 U	700 U	680 UJ		620 U
		2,4-DINITROTOLUENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2,6-DINITROTOLUENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U
		2-CHLORONAPHTHALENE	UG/KG			240 U	250 UJ		290 U	280 U	280 U	300 U	350 U	280 U	280 UJ		250 U

Prepared by: AKN
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Date: 3/8/2023

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG			SP2809				SP2868										SP3101			
		Location			FIELDQC		SB09006		FIELDQC		SB01009		SB01014		SB01016				FIELDQC		SB1	
		Sample Date			6/6/2022		6/4/2022		6/8/2022		6/7/2022		6/6/2022		6/7/2022				6/17/2022		6/17	
		Sample ID	B13018_8-2022FDK		LORNG_TB06_06062022		LORNG_SB09006_0-1_06042022_K	LORNG_SB09006_8-10_06042022_K	LORNG_TB07_06082022		LORNG_SB01009-0-1_06072022_K	LORNG_SB01009-8-10_06072022_K	LORNG_SB01014-0-1_06062022_K	LORNG_SB01014-5-7_06062022_K	LORNG_SB01016-0-1_06072022_K	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK		LORNG_TB08_06172022		LORNG_SB16006_0-1_06172022_K	
		QC Code	D		TB		N	N	TB		N	N	N	N	N	N	FD		TB		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	2-CHLOROPHENOL	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		2-METHYLPHENOL (O-CRESOL)	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		2-NITROANILINE	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		2-NITROPHENOL	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		3,3'-DICHLOROBENZIDINE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		3-NITROANILINE	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		4,6-DINITRO-2-METHYLPHENOL	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		4-BROMOPHENYL PHENYL ETHER	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		4-CHLORO-3-METHYLPHENOL	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		4-CHLOROANILINE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		4-CHLOROPHENYL PHENYL ETHER	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		4-NITROANILINE	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		4-NITROPHENOL	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		BENZALDEHYDE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		BENZIDINE	UG/KG				1100 R	1200 R			1300 R	1200 R	1200 R	1300 R	1600 R	1300 R	1200 R				1100 U	
		BENZOIC ACID	UG/KG				590 U	630 UJ			720 U	690 U	690 U	730 U	860 U	700 U	680 UJ				620 U	
		BENZYL ALCOHOL	UG/KG				480 U	510 UJ			580 U	550 U	550 U	590 U	690 U	570 U	550 UJ				500 U	
		BENZYL BUTYL PHTHALATE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		BIPHENYL (DIPHENYL)	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		BIS(2-CHLOROETHOXY) METHANE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG				240 U	250 UJ			290 U	130 J	280 U	130 J	350 U	280 U	280 UJ				250 U	
		CARBAZOLE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		CRESOLS, M & P	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		DIBENZOFURAN	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		DIETHYL PHTHALATE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		DIMETHYL PHTHALATE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		DI-N-BUTYL PHTHALATE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		DI-N-OCTYLPHTHALATE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		HEXACHLOROBENZENE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		HEXACHLOROBUTADIENE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		HEXACHLOROCYCLOPENTADIENE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		HEXACHLOROETHANE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		ISOPHORONE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		NITROBENZENE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		N-NITROSODIMETHYLAMINE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		N-NITROSODI-N-PROPYLAMINE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		N-NITROSODIPHENYLAMINE	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
		PHENOL	UG/KG				240 U	250 UJ			290 U	280 U	280 U	300 U	350 U	280 U	280 UJ				250 U	
PCBs	T	PCB, TOTAL	UG/KG				78 U	86 U							110 U	90 U	91 U					
		PCB-1016 (AROCLOR 1016)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1221 (AROCLOR 1221)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1232 (AROCLOR 1232)	UG/KG				10 U	11 U							14 U	12 U	12 U					
		PCB-1242 (AROCLOR 1242)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1248 (AROCLOR 1248)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1254 (AROCLOR 1254)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1260 (AROCLOR 1260)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1262 (AROCLOR 1262)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					
		PCB-1268 (AROCLOR 1268)	UG/KG				8.5 U	9.4 U							12 U	9.8 U	9.9 U					

Prepared by: AKN
Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2809			SP2868									SP3101	
		Location		FIELDQC	SB09006		FIELDQC	SB01009		SB01014		SB01016				FIELDQC	SB1
		Sample Date		6/6/2022	6/4/2022		6/8/2022	6/7/2022		6/6/2022		6/7/2022				6/17/2022	6/17
		Sample ID	B13018_8-2022FDK	LORNG_TB06_06062022	LORNG_SB09006_0-1_06042022_K	LORNG_SB09006_8-10_06042022_K	LORNG_TB07_06082022	LORNG_SB01009-0-1_06072022_K	LORNG_SB01009-8-10_06072022_K	LORNG_SB01014-0-1_06062022_K	LORNG_SB01014-5-7_06062022_K	LORNG_SB01016-0-1_06072022_K	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK		LORNG_TB08_06172022	LORNG_SB16006_0-1_06172022_K
		QC Code	D	TB	N	N	TB	N	N	N	N	N	N	FD		TB	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier	Result Qualifier
Pesticides	T	ALDRIN	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		ALPHA ENDOSULFAN	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		BETA ENDOSULFAN	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		CIS-CHLORDANE	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		DIELDRIN	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		ENDOSULFAN SULFATE	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		ENDRIN	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		ENDRIN ALDEHYDE	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		ENDRIN KETONE	UG/KG			1.6 U	1.8 U						2.3 U	1.9 U	1.9 U		
		GAMMA BHC (LINDANE)	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		GAMMA-CHLORDANE	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		HEPTACHLOR	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		HEPTACHLOR EPOXIDE	UG/KG			0.85 U	0.94 U						1.2 U	0.98 U	0.99 U		
		METHOXYCHLOR	UG/KG			8.5 U	9.4 U						12 U	9.8 U	9.9 U		
		P,P'-DDD	UG/KG			1.2 J	1.8 U						4.4 J	0.68 J	0.83 J		
		P,P'-DDE	UG/KG			3.5	1.8 U						14	1.9 U	1.9 U		
		P,P'-DDT	UG/KG			10	1.8 U						6.2	1.9 U	1.9 U		
		TOXAPHENE	UG/KG			16 U	18 U						23 U	19 U	19 U		
Metals	T	ALUMINUM	MG/KG			16200	19200		24500	19300	19400	21100	20400	23700	21700		17100
		ANTIMONY	MG/KG			0.82 U	0.91 U		0.99 U	0.95 U	0.85 U	1.1 U	0.57 UJ	1 U	0.78 U		0.93 U
		ARSENIC	MG/KG			6.59	9.17		6.96	7.31	8.85	7.27	4.19	5.62	6.48		7.38
		BARIUM	MG/KG			183	73		39.1	72.2	46.9	41.7	60	50	49.7		57.1
		BERYLLIUM	MG/KG			0.603	0.677		0.502	0.725	0.654	0.573	0.568 J	0.683	0.624		0.57
		CADMIUM	MG/KG			0.433 J	0.55 U		0.59 U	0.57 U	0.51 U	0.64 U	0.34 U	0.31 U	0.47 U		0.031 J
		CALCIUM	MG/KG			54400	19200		1110	2450	901	1180	3440	583	583		3910
		CHROMIUM, TOTAL	MG/KG			37.5	41.6		44.8	40.4	39.4	39.6	34.5	39.2	43.6		35.5
		COBALT	MG/KG			11.7	15.2		13.2	15.7	15	12	10.6	13.6	13		13.1
		COPPER	MG/KG			24.5	22.4		16	23.4	20.4	14.5	18	22.2	17.8		19.9
		IRON	MG/KG			31100	35400		36100	36100	38100	36200	27800	38500	35100		31100
		LEAD	MG/KG			46.4	13.7		14.2	15.2	17.7	12.7	16.4 J	12.9	14.4		13.3
		MAGNESIUM	MG/KG			10200	9580		9240	9400	7770	7930	7310	9950	9150		8030
		MANGANESE	MG/KG			991	950		520	916	813	473	531	510	530		626
		MERCURY	MG/KG			0.034 J	0.031 J		0.041	0.024 J	0.042	0.046	0.073	0.045	0.0718		0.027 J
		NICKEL	MG/KG			44.6	53.4		46.7	53.6	46.7	41.4	37.8	48.9	55.5		44
		POTASSIUM	MG/KG			1120	2020		1190	1820	1330	1180	1260 J	1440	1360		1420
		SELENIUM	MG/KG			1.1 U	1.3 U		0.43 J	1.3 U	0.43 J	0.61 J	0.23 J	1.5 U	1.1 U		1.3 U
		SILVER	MG/KG			0.577 J	0.656 J		0.616 J	0.628 J	0.538 J	0.704 J	0.29 J	0.68 J	0.521 J		0.23 J
		SODIUM	MG/KG			57.2 J	64.8 J		80.2 J	55.3 J	35.1 J	40 J	40.7 J	39.7 J	37.1 J		50.3 J
		THALLIUM	MG/KG			0.86 J	0.69 J		0.41 J	0.57 J	0.6 J	0.21 J	0.35 J	0.55 J	0.46 J		0.3 J
		VANADIUM	MG/KG			27.1	26.7		29.1	27.4	31.2	29.3	28.6	29.4	29.5		23.4
		ZINC	MG/KG			93	69.7		66.4	72	74.8	62.6	68.3 J	77.7	69.4		61.4
WetChem	T	SOLIDS, PERCENT	PERCENT			96	89		82	88	82	81	67	84	85		87
		TOTAL ORGANIC CARBON	MG/KG														
			UG/G														
Perchlorate	T	PERCHLORATE	UG/KG														

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Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP3101			SP3119			
		Location	5006	SB16011			FIELDQC	SB21001		
		Sample Date	2022	6/17/2022			6/18/2022	6/18/2022		
		Sample ID	LORNG_SB16006_8-10_06172022_K	LORNG_SB16011_0-1_06172022_K		LORNG_SB16011_8-10_06172022_K	LORNG_TB09_06182022	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	LORNG_SB21001_2-3_06182022_K
		QC Code	N	N		N	TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1,1-TRICHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1,2,2-TETRACHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1,2-TRICHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1-DICHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1-DICHLOROETHENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,1-DICHLOROPROPENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2,3-TRICHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2,3-TRICHLOROPROPANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2,4-TRICHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2,4-TRIMETHYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2-DICHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2-DICHLOROETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,2-DICHLOROPROPANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,3-DICHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,3-DICHLOROPROPANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		1,4-DICHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		2,2-DICHLOROPROPANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		2-CHLOROTOLUENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		2-HEXANONE	UG/KG	9.3 UJ	11 UJ	9.7 UJ	12 U	16 U	19 U	8.5 U
		4-CHLOROTOLUENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		ACETONE	UG/KG	22 J	75 J	9.7 UJ	8.7 J	16 U	19 U	8.5 U
		BENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		BROMOBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		BROMOCHLOROMETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		BROMODICHLOROMETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		BROMOFORM	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		BROMOMETHANE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		CARBON DISULFIDE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		CARBON TETRACHLORIDE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		CHLOROBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		CHLOROETHANE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		CHLOROFORM	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	0.97 J	3.1 U	3.8 U	1.7 U
		CHLOROMETHANE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		CIS-1,2-DICHLOROETHYLENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		CIS-1,3-DICHLOROPROPENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		CYCLOHEXANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		DIBROMOCHLOROMETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		DIBROMOMETHANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		DICHLORODIFLUOROMETHANE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		ETHYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		HEXACHLOROBUTADIENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		IODOMETHANE (METHYL IODIDE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		ISOPROPYLBENZENE (CUMENE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		METHYL ACETATE	UG/KG	2.2 UJ	2.7 UJ	2.3 UJ	3 U	3.8 U	4.5 U	2 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/KG	9.3 UJ	11 UJ	9.7 UJ	12 U	16 U	19 U	8.5 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/KG	9.3 UJ	11 UJ	9.7 UJ	12 U	16 U	19 U	8.5 U

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Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP3101			SP3119			
		Location	5006	SB16011			FIELDQC	SB21001		
		Sample Date	2022	6/17/2022			6/18/2022	6/18/2022		
		Sample ID	LORNG_SB16006_8-10_06172022_K	LORNG_SB16011_0-1_06172022_K		LORNG_SB16011_8-10_06172022_K	LORNG_TB09_06182022	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	LORNG_SB21001_2-3_06182022_K
		QC Code	N	N		N	TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	METHYLCYCLOHEXANE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		METHYLENE CHLORIDE	UG/KG	120 UJ	390 UJ	110 UJ	12 U	16 U	19 U	8.5 U
		NAPHTHALENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		N-BUTYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		N-PROPYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		SEC-BUTYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		STYRENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		T-BUTYLBENZENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TERT-BUTYL METHYL ETHER	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TETRACHLOROETHYLENE(PCE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TOLUENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TRANS-1,2-DICHLOROETHENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TRANS-1,3-DICHLOROPROPENE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TRICHLOROETHYLENE (TCE)	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		TRICHLOROFLUOROMETHANE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
		VINYL ACETATE	UG/KG	1.9 UJ	2.3 UJ	1.9 UJ	2.5 U	3.1 U	3.8 U	1.7 U
		VINYL CHLORIDE	UG/KG	3.7 UJ	4.5 UJ	3.9 UJ	5 U	6.2 U	7.5 U	3.4 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/KG		59 UJ	53 UJ		63 U	65 U	52 U
		2-METHYLNAPHTHALENE	UG/KG	11 J	2.7 J	5.7 J		3.2 J	13 U	10 U
		ACENAPHTHENE	UG/KG	11 U	12 U	10 U		14 J	11 J	10 U
		ACENAPHTHYLENE	UG/KG	11 U	12 U	10 U		12 U	13 U	10 U
		ANTHRACENE	UG/KG	11 U	12 U	10 U		23 J	32	10 U
		BENZO(A)ANTHRACENE	UG/KG	11 U	2.9 J	10 U		130	200	2.4 J
		BENZO(A)PYRENE	UG/KG	11 U	4.9 J	10 U		88	130	10 U
		BENZO(B)FLUORANTHENE	UG/KG	11 U	9.1 J	10 U		160	210	2.7 J
		BENZO(G,H,I)PERYLENE	UG/KG	11 U	12 J	10 U		61	85	10 U
		BENZO(K)FLUORANTHENE	UG/KG	11 UJ	12 UJ	10 UJ		56	68	10 U
		CHRYSENE	UG/KG	11 UJ	4.2 J	10 UJ		110	160	2.2 J
		DIBENZ(A,H)ANTHRACENE	UG/KG	11 U	12 U	10 U		14 J	24 J	10 U
		FLUORANTHENE	UG/KG	11 U	2.8 J	10 U		210	320	4.2 J
		FLUORENE	UG/KG	11 U	12 U	10 U		11 J	9.9 J	10 U
		INDENO(1,2,3-C,D)PYRENE	UG/KG	11 U	19 J	10 U		130	200	2.3 J
		NAPHTHALENE	UG/KG	11 U	12 U	6.7 J		12 U	13 U	10 U
		PENTACHLOROPHENOL	UG/KG	53 U	59 U	53 U		63 U	65 U	52 U
		PHENANTHRENE	UG/KG	2.3 J	12 U	10 U		110	140	10 U
		PYRENE	UG/KG	11 U	3.3 J	10 U		180	260	3.2 J
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		1,2-DICHLOROBENZENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		1,2-DIPHENYLHYDRAZINE	UG/KG	530 U	580 U	500 U		620 U	610 U	510 U
		1,3-DICHLOROBENZENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		1,4-DICHLOROBENZENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		1-METHYLNAPHTHALENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,3,4,6-TETRACHLOROPHENOL	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,4,5-TRICHLOROPHENOL	UG/KG	660 U	730 U	620 U		770 U	760 U	640 U
		2,4,6-TRICHLOROPHENOL	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,4-DICHLOROPHENOL	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,4-DIMETHYLPHENOL	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,4-DINITROPHENOL	UG/KG	660 U	730 U	620 U		770 U	760 U	640 U
		2,4-DINITROTOLUENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2,6-DINITROTOLUENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U
		2-CHLORONAPHTHALENE	UG/KG	260 U	290 U	250 U		310 U	310 U	260 U

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Date: 12/14/22
Checked by: ALJ
Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP3101			SP3119			
		Location	5006	SB16011			FIELDQC	SB21001		
		Sample Date	2022	6/17/2022			6/18/2022	6/18/2022		
		Sample ID	LORNG_SB16006_8-10_06172022_K	LORNG_SB16011_0-1_06172022_K		LORNG_SB16011_8-10_06172022_K	LORNG_TB09_06182022	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	LORNG_SB21001_2-3_06182022_K
		QC Code	N	N		N	TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	2-CHLOROPHENOL	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		2-METHYLPHENOL (O-CRESOL)	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		2-NITROANILINE	UG/KG	660 U	730	U	620 U	770 U	760 U	640 U
		2-NITROPHENOL	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		3,3'-DICHLOROBENZIDINE	UG/KG	260 U	290	U	250 U	310 U	310 R	260 U
		3-NITROANILINE	UG/KG	660 U	730	U	620 U	770 U	760 UJ	640 U
		4,6-DINITRO-2-METHYLPHENOL	UG/KG	660 U	730	U	620 U	770 U	760 U	640 U
		4-BROMOPHENYL PHENYL ETHER	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		4-CHLORO-3-METHYLPHENOL	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		4-CHLOROANILINE	UG/KG	260 U	290	U	250 U	310 UJ	310 R	260 UJ
		4-CHLOROPHENYL PHENYL ETHER	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		4-NITROANILINE	UG/KG	660 U	730	U	620 U	770 U	760 U	640 U
		4-NITROPHENOL	UG/KG	660 U	730	U	620 U	770 U	760 U	640 U
		BENZALDEHYDE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		BENZIDINE	UG/KG	1200 U	1300	U	1100 U	1400 R	1400 R	1200 R
		BENZOIC ACID	UG/KG	660 U	730	U	620 U	770 U	760 U	640 U
		BENZYL ALCOHOL	UG/KG	530 U	580	U	500 U	620 U	610 U	510 U
		BENZYL BUTYL PHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		BIPHENYL (DIPHENYL)	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		BIS(2-CHLOROETHOXY) METHANE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		CARBAZOLE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		CRESOLS, M & P	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		DIBENZOFURAN	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		DIETHYL PHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		DIMETHYL PHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		DI-N-BUTYL PHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		DI-N-OCTYLPHTHALATE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		HEXACHLOROBENZENE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		HEXACHLOROBUTADIENE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		HEXACHLOROCYCLOPENTADIENE	UG/KG	260 U	290	U	250 U	310 UJ	310 UJ	260 UJ
		HEXACHLOROETHANE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		ISOPHORONE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		NITROBENZENE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		N-NITROSODIMETHYLAMINE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		N-NITROSODI-N-PROPYLAMINE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		N-NITROSODIPHENYLAMINE	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
		PHENOL	UG/KG	260 U	290	U	250 U	310 U	310 U	260 U
PCBs	T	PCB, TOTAL	UG/KG		89	U	80 UJ	910	810	28 J
		PCB-1016 (AROCLOR 1016)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1221 (AROCLOR 1221)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1232 (AROCLOR 1232)	UG/KG		11	U	10 UJ	13 U	13 U	11 U
		PCB-1242 (AROCLOR 1242)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1248 (AROCLOR 1248)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1254 (AROCLOR 1254)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1260 (AROCLOR 1260)	UG/KG		9.7	U	8.8 UJ	910	810	28
		PCB-1262 (AROCLOR 1262)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U
		PCB-1268 (AROCLOR 1268)	UG/KG		9.7	U	8.8 UJ	11 U	11 U	9.6 U

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Date: 3/8/2023

Table 2b - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG			SP3101				SP3119								
		Location	5006		SB16011				FIELDQC		SB21001						
		Sample Date	2022		6/17/2022				6/18/2022		6/18/2022						
		Sample ID	LORNG_SB16006_8-10_06172022_K		LORNG_SB16011_0-1_06172022_K		LORNG_SB16011_8-10_06172022_K		LORNG_TB09_06182022		LORNG_SB21001_0-1_06182022_K		LORNG_SB21001_0-1_06182022FD_K		LORNG_SB21001_2-3_06182022_K		
		QC Code	N		N		N		TB		N		FD		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Pesticides	T	ALDRIN	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		ALPHA ENDOSULFAN	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		BETA ENDOSULFAN	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		CIS-CHLORDANE	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		DIELDRIN	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		ENDOSULFAN SULFATE	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		ENDRIN	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		ENDRIN ALDEHYDE	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		ENDRIN KETONE	UG/KG			1.9	U	1.7	UJ			60	J	63	J	1.9	UJ
		GAMMA BHC (LINDANE)	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		GAMMA-CHLORDANE	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		HEPTACHLOR	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		HEPTACHLOR EPOXIDE	UG/KG			0.97	U	0.88	UJ			1.1	U	1.1	U	0.96	UJ
		METHOXYCHLOR	UG/KG			9.7	U	8.8	UJ			11	U	11	U	9.6	UJ
		P,P'-DDD	UG/KG			1.9	U	1.7	UJ			2.1	U	2.2	U	1.9	UJ
		P,P'-DDE	UG/KG			1.9	U	1.7	UJ			5.5		5.2		1.9	UJ
		P,P'-DDT	UG/KG			1.9	U	1.7	UJ			57	J	56	J	1.9	UJ
		TOXAPHENE	UG/KG			19	U	17	UJ			21	U	22	U	19	UJ
Metals	T	ALUMINUM	MG/KG	18200		17600		17800				18500		21000		17400	
		ANTIMONY	MG/KG	0.86	U	0.78	U	1	U			1	U	1.1	U	0.89	U
		ARSENIC	MG/KG	8.92		7.26		6.47				6.99		6.9		7.57	
		BARIUM	MG/KG	51.1		55.3		61.3				52.3		59.6		65.7	
		BERYLLIUM	MG/KG	0.595		0.666		0.646				0.67		0.841		0.688	
		CADMIUM	MG/KG	0.156	J	0.12	J	0.12	J			0.458	J	0.665	J	0.228	J
		CALCIUM	MG/KG	12700		6080		54600				3000	J	5750	J	2450	
		CHROMIUM, TOTAL	MG/KG	37.8		39.1		35				35		49		41.8	
		COBALT	MG/KG	13.6		13		12				13.9		16.1		12.9	
		COPPER	MG/KG	22.7		19.8		20.1				25.9		24.8		21.6	
		IRON	MG/KG	33400		30200		28900				31000		35100		30800	
		LEAD	MG/KG	13.9		22.3		11				22.5	J	56.2	J	17.1	
		MAGNESIUM	MG/KG	9380		8290		9030				8760		11600		8870	
		MANGANESE	MG/KG	626		672		624				652		764		680	
		MERCURY	MG/KG	0.037		0.033		0.028	J			0.233		0.304		0.032	J
		NICKEL	MG/KG	45.1		45.4		43.5				44.1		59.5		46.8	
		POTASSIUM	MG/KG	1600		1760		2220				1120		1460		1500	
		SELENIUM	MG/KG	1.2	U	1.1	U	1.4	U			0.36	J	0.66	J	1.2	U
		SILVER	MG/KG	0.69	U	0.18	J	0.17	J			0.44	J	0.734	J	0.632	J
		SODIUM	MG/KG	56.5	J	55.6	J	67.9	J			44.8	J	66.9	J	54.3	J
		THALLIUM	MG/KG	0.31	J	0.31	J	0.24	J			0.43	J	0.4	J	0.4	J
		VANADIUM	MG/KG	28.6		27		25.8				25.2		34.4		26.6	
		ZINC	MG/KG	64		64.8		56.6				78.5		95.3		59.4	
WetChem	T	SOLIDS, PERCENT	PERCENT	90		84		89				78		73		88	
		TOTAL ORGANIC CARBON	MG/KG														
			UG/G														
Perchlorate	T	PERCHLORATE	UG/KG														

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA95871															
		Location	SB07004			SB07005		SB07006		SB07007		SB08001		SB08002	
		Sample Date	5/20/2022			5/20/2022		5/20/2022		5/20/2022		5/19/2022		5/19/2022	
		Sample ID	LORNG_SB07004_0-1_05202022	LORNG_SB07004_8-10_05202022	LORNG_SB07004_8-10_05202022FD	LORNG_SB07005_0-1_05202022	LORNG_SB07005_8-10_05202022	LORNG_SB07006_0-1_05202022	LORNG_SB07006_8-10_05202022	LORNG_SB07007_0-1_05202022	LORNG_SB07007_8-9_05202022	LORNG_SB08001_0-1_05192022	LORNG_SB08001_8-10_05192022	LORNG_SB08002_0-1_05192022	LORNG_SB08002_8-10_05192022
		QC Code	N	N	FD	N	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	4.2	16.9	12.6	0.76 J	14.7	1.1 U	1.1 U	0.79 J	73.5 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	5.5	1.1 U	1 U	1.7 J	1.1 U	1.1 U	1.1 U	0.92 J	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.4 J	1.1 U	1 U	2.5 U	5.4 U	1.1 U	1.1 U	5.5 U	2.4 UJ	6.1 U	1.1 U	6.1 UJ	1.1 U	1.2 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.5 J	1.1 U	1 U	2.2 J	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	7.2	1.1 U	1 U	3.5	1.1 U	1.1 U	1.1 U	1.4 J	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.5 J	1.1 U	1 U	0.81 J	1.1 U	1.1 U	1.1 U	0.63 J	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	0.8 J	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.4 U	0.59 J	1 U	1.3 U	5.1	1.1 U	1.1 U	0.73 J	25.7 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	3.5	1.1 U	1 U	2.9	1.1 U	1.1 U	1.1 U	0.66 J	1.8 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	4.6	5.1	4.1	3.8	15.6	0.75 J	1.8 J	4	127	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	2.2 J	0.7 J	0.56 J	1.6 J	0.57 J	1.1 U	1.1 U	0.7 J	2.2 J	6.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.9 J	1.1 U	1 U	2.4 J	1.1 U	1.1 U	1.1 U	4	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	3	1.1 U	1 U	3.9	1.4 J	0.85 J	1.1 U	1.3 J	0.7 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	26.8	1.1 U	1 U	4.7	1.1 U	1.1 U	1.1 U	1.6 J	2.4 U	1.2 U	1.1 U	6.1 U	1.1 U	1.2 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	82.5	3.8 J	1.4 J	124	19.6	33	1.1 U	223	1.2 U	1.5 J	1.1 U	11.8	1.1 U	1.2 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	4.7	2 J	1.5 J	5	4.8	0.64 J	1.1 U	1.5 J	23.5 J	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	3.4	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	5.6	1.4 J	1.2 J	5.9	1.1 J	1.1 U	1.1 U	1.6 J	2 J	6.1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.4 U	1.1 U	1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	4.6	1.1 U	1 U	2.6	1.1 U	1.1 U	1.1 U	1.2 J	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA95871										FA95916			
		Location	SB08003			SB08004		SB08005		SB08006			SB07008		SB07009	
		Sample Date	5/17/2022			5/17/2022		5/19/2022		5/19/2022			5/20/2022		5/20/2022	
		Sample ID	LORNG_SB08003_0-1_05172022	LORNG_SB08003_0-1_05172022FD	LORNG_SB08003_8-9_05172022	LORNG_SB08004_0-1_05172022	LORNG_SB08004_8-10_05172022	LORNG_SB08005_0-1_05192022	LORNG_SB08005_8-10_05192022	LORNG_SB08006_0-1_05192022	LORNG_SB08006_8-10_05192022		LORNG_SB07008_0-1_05202022	LORNG_SB07008_8-10_05202022	LORNG_SB07009_0-1_05202022	LORNG_SB07009_8-9_05202022
		QC Code	N	FD	N	N	N	N	N	N	N		N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 J	1.1 U	1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	2.5	1.1 U	1.1 U	1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3 UJ	1.2 UJ	1.1 U	5.5 UJ	1.1 U	6.3 UJ	1.1 U	5.7 U	1.1 U	6 U	1.1 U	1.1 U	1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 UJ	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.3 J	1.1 U	1.1 U	1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	2 J	1.1 U	1.1 U	1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 J	1.1 U	1.1 U	1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.5 J	1.1 U	1.1 U	1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.6 J	0.57 J	1.1 U	1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	0.67 J	1.1 U	1.1 U	1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	3.4	1.1 U	1.1 U	1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	2.5	1.1 U	1.1 U	1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3 U	1.2 U	1.1 U	5.5 U	1.1 U	6.3 U	1.1 U	5.7 U	1.1 U	1.8 J	1.1 U	1.1 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	2.2 J	2.4 J	1.1 U	2.5	1.1 U	9.4	1.1 U	6.7	1.1 U	23.9	1.6 J	5.5	0.74 J
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	0.77 J	1.1 U	1.1 U	1.1 U	2.7	1.1 U	1.1 U	1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	2 J	1.1 U	1.1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3 U	1.2 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U	1.1 U	1.1 U	2.7	1.1 U	1.1 U	1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA95916																	
		Location	SB07010		SB07011		SB07012			SB07013		SB07014		SB10005						
		Sample Date	5/20/2022		5/20/2022		5/20/2022			5/20/2022		5/21/2022		5/21/2022						
		Sample ID	LORNG_SB07010_0-1_05202022		LORNG_SB07010_8-10_05202022		LORNG_SB07011_0-1_05202022		LORNG_SB07011_8-10_05202022	LORNG_SB07012_0-1_05202022		LORNG_SB07012_8-10_05202022	LORNG_SB07012_8-10_05202022FD	LORNG_SB07013_0-1_05202022		LORNG_SB07013_6-7_05202022		LORNG_SB07014_0-1_05212022		LORNG_SB07014_8-10_05212022		LORNG_SB10005_0-1_05212022		LORNG_SB10005_8-10_05212022	
		QC Code	N		N		N		N	N		N	FD	N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.8	U	1.1	U	5.4	UJ	1.1	U	5.3	UJ	1.1	U	1.1	U	5.7	U	1.1	U	5.6	U	1	U	1.2	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	1.1	U	1.2	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	1.1	U	0.79	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	2.5		1.1	U	9.5		2.1		1.8	J	1.1	U	1.1	U	0.57	J	5.8		1.1	U	1	U	1.2	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	0.67	J	1.1	U	0.91	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	1.1	U	2.2		1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	0.75	J	1.1	U	1.3	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2	U	1.1	U	3.4	J	1.1	U	5.3	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	25.3		12.8		112		17.3		21.5		1.2	J	1.1	U	7		16.4		1.4	J	1	U	12.5		1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	0.98	J	1.1	U	2.8		1.1	U	1	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	1.1	U	1.6	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.1	U	0.71	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.2	U	1.1	U

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J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
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NG/L = nanograms per liter
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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA95916															
			Location	SB10006				SB10007				SB10008		SB10009		SB11001			
			Sample Date	5/22/2022				5/22/2022				5/21/2022		5/21/2022		5/22/2022			
			Sample ID	LORNG_SB10006_0-1_05222022		LORNG_SB10006_8-10_05222022		LORNG_SB10006_8-10_05222022FD		LORNG_SB10007_0-1_05222022		LORNG_SB10007_8-10_05222022		LORNG_SB10008_0-1_05212022		LORNG_SB10008_8-9_05212022		LORNG_SB10009_0-1_05212022	
			QC Code	N		N		FD		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.6	U	1	U	1.1	U	6.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	0.84	J	1.1	U	1.3	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.83	J	1	U	1.1	U	1.4	J	1.1	U	23.1		1.1	U	6.8	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	0.69	J	1.1	U	1.3	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1	U	1.1	U	1.3	U	1.1	U	1.2	U	1.1	U	1.3	U

			SDG	FA95916															
			Location	SB10009		SB11001													
			Sample Date	5/21/2022		5/22/2022													
			Sample ID	LORNG_SB10009_8-10_05212022		LORNG_SB11001_0-1_05222022		LORNG_SB11001_8-10_05222022											
			QC Code	N		N		N											
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier										
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U										
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U										
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.1	U	1.1	U										
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U										
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	5.7	U	1.1	U										
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1	U	10.3		1.1	U										
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.1	U										
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.1	U										

Notes:
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U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA95934				FA95934						FA95977									
		Location		SB13009		SB13014		SB13014		SB13015				SB13003		SB13004				SB15			
		Sample Date		5/23/2022		5/23/2022		5/23/2022		5/23/2022				5/24/2022		5/24/2022				5/24/			
		Sample ID		B13009_0-32022		LORNG_SB13009_8-10_05232022		LORNG_SB13014_0-1_05232022		LORNG_SB13014_0-1_05232022FD		LORNG_SB13014_8-10_05232022		LORNG_SB13015_0-1_05232022		LORNG_SB13015_8-10_05232022		LORNG_SB13003_0-1_05242022		LORNG_SB13003_8-10_05242022		LORNG_SB13004_0-1_05242022		LORNG_SB13004_8-10_05242022		LORNG_SB13008_0-1_05242022	
		QC Code		N		N		N		FD		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorooctanesulfonic acid (PFOS)	UG/KG		1.1 U		1 J		1.2 J		0.58 J		0.82 J		1.1 U		1.8 J		1.1 U		3.1		1.1 U		8.4
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.2 U	

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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA95977										FA95977				FA96109	
Location			3008	SB13012				SB13017				SB13023				SB06010			
Sample Date			2022	5/24/2022				5/24/2022				5/24/2022				5/31/2022			
Sample ID				LORNG_SB13008_8-10_05242022		LORNG_SB13012_0-1_05242022		LORNG_SB13012_8-10_05242022		LORNG_SB13017_0-1_05242022		LORNG_SB13017_8-10_05242022		LORNG_SB13023_0-1_05242022		LORNG_SB13023_6-7_05242022		LORNG_SB06010_0-1_05312022		LORNG_SB06010_5-6_05312022	
QC Code				N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	0.79	J	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	0.78	J	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	7.3	U	1.2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.6	J	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	J	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	0.76	J	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	J	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1	U	16.8		1.1	U	5.4		0.69	J	1.2	U	1.1	U	25		5.6	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.8	J	1.2	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.6	J	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.5	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	0.75	J	1.2	U

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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
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Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96109		FA96203																	
			Location	SB13020		SB12008			SB13010			SB13011			SB13016				SB14				
			Sample Date	6/1/2022		6/2/2022			6/2/2022			6/1/2022			6/2/2022				6/2/2				
			Sample ID	B13020_0-12022	LORNG_SB13020_8-10_06012022	LORNG_SB12008_0-1_06022022		LORNG_SB12008_8-10_06022022	LORNG_SB12008_8-10_06022022FD		LORNG_SB13010_0-1_06022022		LORNG_SB13010_8-10_06022022		LORNG_SB13011_0-1_06012022		LORNG_SB13011_8-10_06012022		LORNG_SB13016_0-1_06022022		LORNG_SB13016_8-10_06022022		LORNG_SB14004_0-1_06022022	
			QC Code	N		N			N			N			N			N			N			
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorononanoic acid (PFNA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	J	1 U		6.7		2.3		1.6 J		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1 U		1.1 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U		1.2 U		1.1 U		1.1 U	

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA96203			FA96238									
		Location		4004	SB14005		SB05006			SB05007		SB05008		SB05009		
		Sample Date		2022	6/2/2022		6/4/2022			6/3/2022		6/3/2022		6/3/2022		
		Sample ID		LORNG_SB14004_8-10_06022022	LORNG_SB14005_0-1_06022022	LORNG_SB14005_8-10_06022022	LORNG_SB05006_0-1_06042022	LORNG_SB05006_0-1_06042022FD	LORNG_SB05006_8-10_06042022	LORNG_SB05007_0-1_06032022	LORNG_SB05007_8-10_06032022	LORNG_SB05008_0-1_06032022	LORNG_SB05008_8-10_06032022	LORNG_SB05009_0-1_06032022	LORNG_S 10_060
		QC Code		N	N	N	N	FD	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1.6 J	1.1 U	1.6 J	1.2 J	1.1 U	1.1 J	1.1 U	0.84 J	1.1 U	1.1 U	1.1
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1.5 J	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1.1 U	1.1 U	1.4 J	1 J	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	45.2	1.1 U	32.7	23.1	1.4 J	6.3	1.1 U	41.1	0.67 J	1.5 J	0.58
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1.5 J	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.1 J	1.1 U	1.1 U	1.1
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = nanograms per liter
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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96238																	
Location					SB05010	SB05011				SB05012		SB05013		SB05014				SB05015			
Sample Date					6/3/2022	6/3/2022				6/3/2022		6/3/2022		6/3/2022				6/3/2022			
Sample ID				B05009_8-032022	LORNG_SB05010_0-1-06032022	LORNG_SB05011_0-1_06032022		LORNG_SB05011_8-10_06032022		LORNG_SB05012_0-1_06032022	LORNG_SB05012_8-10_06032022	LORNG_SB05013_0-1_06032022	LORNG_SB05013_8-10_06032022	LORNG_SB05014_0-1_06032022	LORNG_SB05014_6-8_06032022			LORNG_SB05015_0-1_06032022		LORNG_SB05015_8-10_06032022	
QC Code				N	N	N		N		N	N	N	N	N	N			N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.1	U	1.2	U	0.78	J	1	U	1.4	J	3		8		0.79	J	4.7		1.1	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.9	J	1.5	J	1.1	U	1.1	U	1.1	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.1	U	1.2	UJ	1.1	U	1	U	1.1	U	1.1	UJ	1.1	U	1.1	UJ	1.1	U	1.1	UJ	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.7	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.4	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.1	U	1.2	U	1.1	U	3.2		0.65	J	1.1	U	1.1	J	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	0.59	J	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.1	U	0.94	J	2.9		31.3		3.4		2.4		6.1		1.7	J	2.6		1.2	J	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	0.74	J	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.1	U	0.63	J	1.1	U	0.79	J	1.1	U	0.82	J	1.1	U	1.1	U	1.1	U	0.68	J	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.5	J	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.1	U	0.66	J	1.1	U	4.1		1.1	U	6.9		1.1	U	1.1	U	1.1	U	1.9	J	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	J	22.5		29.8		29.4		291		18.6		60.2		30.1		120		3.4		34.9		5.1	
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	0.87	J	1.1	U	1.3	J	1.1	U	0.75	J	1.1	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.9	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	J	0.83	J	1.1	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1	U	1.1	U	0.58	J	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96238											
			Location	SB05017		SB05019				SB05020		SB09005			
			Sample Date	6/4/2022		6/4/2022				6/4/2022		6/5/2022			
			Sample ID	LORNG_SB05017_0-1_06042022	LORNG_SB05017_8-10_06042022	LORNG_SB05019_0-1_06042022	LORNG_SB05019_8-10_06042022			LORNG_SB05020_0-1_06042022	LORNG_SB05020_8-10_06042022	LORNG_SB09005_0-1_06052022	LORNG_SB09005_8-10_06052022		
			QC Code	N	N	N	N			N	N	N	N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.2	U	2.1	J	1.6	J	1.2	U	1.1	U	1	U	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.2	U	9.8		4		1.2	U	1.1	U	1	U	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.2	U	0.71	J	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.2	U	0.87	J	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.2	U	0.6	J	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.2	U	0.82	J	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.97	J	1.2	U	6.7		10.9		7.5		0.62	J	1	U	1.2	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.2	U	1.3	J	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.2	U	1.2	J	0.62	J	1.2	U	1.1	U	1	U	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.2	U	2.8		1.1	U	1.2	U	1.1	U	1	U	1.2	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96238														FA96351									
Location				3023	SB18024				SB18025				SB18026					SB01005				SB01007				SB0	
Sample Date				2022	6/5/2022				6/5/2022				6/5/2022					6/7/2022				6/7/2022				6/7/2	
Sample ID				B18023_8-052022	LORNG_SB18024_0-1_06052022		LORNG_SB18024_8-10_06052022		LORNG_SB18025_0-1_06052022		LORNG_SB18025_8-10_06052022		LORNG_SB18026_0-1_06052022		LORNG_SB18026_8-10_06052022			LORNG_SB01005_0-1_06072022		LORNG_SB01005_8-10_06072022		LORNG_SB01007_0-1_06072022		LORNG_SB01007_8-10_06072022		LORNG_SB01008_0-1_06072022	
QC Code				N	N		N		N		N		N		N			N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.2	J	1.6	J	1.1	U	1.1	U	1.4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.1	U	1.2	U	5.6	U	1.1	U	5.2	U	1.1	U		1.3	U	1.1	U	5.5	UJ	1.1	U	6.8	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.2	J	1.1	U	0.88	J	1.1	U	1.4	U
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	0.94	J	1.1	U	1.4	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		2.9		0.84	J	8.8		1.8	J	1.4	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.2	J	1.1	U	1.6	J	1.1	U	1.4	U
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.1	J	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.1	U	1.2	U	5.6	U	1.1	U	1	U	1.1	U		8.8		1.7	J	37.5		1.1	U	6.8	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	U	2.4		1.2	U	1.1	U	1.1	U	1	U	1.1	U		64.5		10.1		122		22		14.8	
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.2	J	1.1	U	1.2	J	1.1	U	1.4	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.4	J	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		1.3	U	1.1	U	1.1	U	1.1	U	1.4	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U		0.77	J	1.1	U	1.1	U	1.1	U	1.4	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96351															
Location				1008		SB01009				SB01010				SB01011					
Sample Date				2022		6/7/2022				6/6/2022				6/6/2022					
Sample ID				LORNG_SB01008_8-10_06072022		LORNG_SB01009_0-1_06072022		LORNG_SB01009_8-10_06072022		LORNG_SB01009_8-10_06072022FD		LORNG_SB01010_0-1_06062022		LORNG_SB01010_8-10_06062022		LORNG_SB01011_0-1_06062022		LORNG_SB01011_8-10_06062022		LORNG_SB01011_8-10_06062022FD	
QC Code				N		N		N		FD		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	0.67	J	0.7	J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	0.8	J	0.63	J
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	5.9	U	1.1	U	1.1	U	1	U	1.1	U	5.2	UJ	1.1	U	1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	0.81	J	0.9	J
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	5.9	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	0.76	J	4.4		0.97	J	1.3	J	1	U	1.1	U	2.5		16.4		14.2	
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.2	U	1.1	U	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter
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Prepared by: AKN
Date: 9/28/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA96351																		
		Location		SB01012					SB01013				SB01014				SB01016					
		Sample Date		6/7/2022		6/6/2022			6/7/2022				6/6/2022				6/7/2022					
		Sample ID		LORNG_SB01012_0-1_06062022		LORNG_SB01012_0-1_06062022FD		LORNG_SB01012_8-10_06062022	LORNG_SB01013_0-1_06072022		LORNG_SB01013_8-10_06072022		LORNG_SB01014_0-1_06062022		LORNG_SB01014_5-7_06062022		LORNG_SB01016_0-1_06072022		LORNG_SB01016_8-10_06072022		LORNG_SB01016_8-10_06072022FD	
		QC Code		N		FD		N	N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.3	J	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2	U	1.2	U	1.1 U	6.3	UJ	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	6	UJ	6	U	1.1 U	1.3	U	1.1	U	5.9	U	1.2	U	1.3	U	1.2	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2	U	1.2	U	1.1 U	6.3	UJ	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	5.7	
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	1.2	U	1.1 U	2.1	J	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	1.2	U	1.1 U	0.67	J	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	1.2	U	1.1 U	1.2	J	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	0.64	J	0.7	J	1.1 U	7.8		0.91	J	1.2	U	1.1	J	1.3	U	1.2	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2	U	1.2	U	1.1 U	3		1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2	U	1.2	U	1.1 U	1.8	J	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	21.2		22.4		2.6	86		10.7		3.1		33		1.9	J	1.2	U	1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2	U	1.2	U	1.1 U	4.2		1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	1.2	U	1.1 U	3.4		1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.2	U	1.1 U	1.3	U	1.1	U	1.2	U	1.2	U	1.3	U	1.2	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96351						FA96551					
			Location	SB18018		SB18019		SB18013		SB18015		SB18017	
			Sample Date	6/6/2022		6/6/2022		6/14/2022		6/14/2022		6/14/2022	
			Sample ID	LORNG_SB18018_0-1_06062022	LORNG_SB18018_8-10_06062022	LORNG_SB18019_0-1_06062022	LORNG_SB18019_8-10_06062022	LORNG_SB18013_0-1_06142022	LORNG_SB18013_8-10_06142022	LORNG_SB18015_0-1_06142022	LORNG_SB18015_8-10_06142022	LORNG_SB18017_0-1_06142022	LORNG_SB18017_8-10_06142022
			QC Code	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1 UJ	1 U	5.7 U	5.3 UJ	1.1 UJ	1 U	5.2 U	1.1 U	5.2 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 UJ	1 U	5.2 U	1.1 U	5.2 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1.1 U

Notes:
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U = Analyte not detected at the associated detection limits
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA96551						FA96616			
		Location	SB22001		SB22002		SB22003		SB16005		SB16006	
		Sample Date	6/14/2022		6/14/2022		6/14/2022		6/17/2022		6/17/2022	
		Sample ID	LORNG_SB22001_0-1_06142022	LORNG_SB22001_7-8_06142022	LORNG_SB22002_0-1_06142022	LORNG_SB22002_6-7_06142022	LORNG_SB22003_0-1_06142022	LORNG_SB22003_6-7_06142022	LORNG_SB16005_0-1_06172022	LORNG_SB16005_8-10_06172022	LORNG_SB16006_0-1_06172022	LORNG_SB16006_8-10_06172022
		QC Code	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	5.3 U	0.99 UJ	1.2 U	1.2 UJ	1.1 UJ	8.5 U	5.1 U	0.93 U	5.6 U	4.8 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1 J	1 U	0.93 U	1.1 U	0.95 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 UJ	1.7 U	1 U	0.93 U	1.1 U	4.8 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.3	2.3	12.8	6.3	0.81 J	15.2	1.3 J	0.93 U	1.1 U	0.95 U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1 U	0.99 U	0.73 J	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1 U	0.99 U	1.2 U	1.2 U	1.1 U	1.7 U	1 U	0.93 U	1.1 U	0.95 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter
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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

| | | SDG | | FA96616 | | |

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96627																			
			Location	SB18007		SB18008				SB18009				SB18010		SB18011						SB15	
			Sample Date	6/15/2022		6/15/2022				6/15/2022				6/15/2022		6/15/2022						6/15/	
			Sample ID	B18007_0-52022	LORNG_SB18007_8-10_06152022	LORNG_SB18008_0-1_06152022		LORNG_SB18008_7-8_06152022		LORNG_SB18009_0-1_06152022		LORNG_SB18009_8-10_06152022		LORNG_SB18010_0-1_06152022	LORNG_SB18010_8-10_06152022	LORNG_SB18011_0-1_06152022		LORNG_SB18011_8-10_06152022		LORNG_SB18011_8-10_06152022FD		LORNG_SB18012_0-1_06152022	
			QC Code	N	N	N		N		N		N		N	N	N		N		FD		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.1	U	0.96	UJ	1	U	1.1	UJ	1	U	1	UJ	1.1	UJ	5.1	UJ	5.4	U	0.92	U	6 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.65	J	1.1	U	0.92	U	1.2 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.79	J	1.1	U	0.92	U	1.2 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.58	J	1.1	U	0.92	U	1.2 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.1	U	0.96	UJ	1	U	1.1	UJ	1	U	1	UJ	1.1	UJ	5.1	U	1.1	U	0.92	U	1.2 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	0.82 J
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.57	J	1.1	U	0.92	U	1.2 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	1	U	1.1	U	0.92	U	1.2 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.54	J	1.1	U	0.92	U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.77	J	1.1	U	0.92	U	1.2 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.85	J	1.1	U	0.92	U	1.2 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.1	U	0.96	U	1	U	1.1	U	1	U	1	U	1.1	U	0.74	J	1.1	U	0.92	U	1.2 U

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UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96627								FA96640A											
Location				3012		SB18014				SB18016				SB06007				SB06009					SB0
Sample Date				2022		6/15/2022				6/15/2022				6/16/2022				6/16/2022					6/16/
Sample ID				LORNG_SB18012_8-10_06152022		LORNG_SB18014_0-1_06152022		LORNG_SB18014_8-10_06152022		LORNG_SB18016_0-1_06152022		LORNG_SB18016_8-10_06152022		LORNG_SB06007_0-1_06162022		LORNG_SB06007_6-7_06162022		LORNG_SB06009_0-1_06162022		LORNG_SB06009_8-10_06162022		LORNG_SB06009_8-10_06162022FD		LORNG_SB06011_0-1_06162022	LORNG_S 10_06
QC Code				N		N		N		N		N		N		N		N		N		FD		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Result
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1	U	5.4	U	1.1	U	4.9	U	5.2	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorobutanoic acid (PFBA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorodecane sulfonate (PFDS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorodecanoic acid (PFDA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorododecanoic acid (PFDoA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorohexanoic acid (PFHxA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorononanoic acid (PFNA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1	U	1.1	U	1.1	U	4.9	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	2	J	0.88	J	0.98	J	8.6	1.2
		Perfluorooctanoic acid (PFOA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluoropentanoic acid (PFPeA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1	U	1.1	U	1.1	U	0.97	U	1	U	0.96	U	1	U	1	U	1	U	0.99	U	1.2	U 1

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96640A												FA96640A	
Location				SB06011		SB06012		SB06013		SB16013		SB16014				SB18020	
Sample Date				6/16/2022		6/16/2022		6/16/2022		6/16/2022		6/16/2022				6/16/2022	
Sample ID				LORNG_SB06011_8-10_06162022	LORNG_SB06011_8-10_06162022FD	LORNG_SB06012_0-1_06162022	LORNG_SB06012_1-2_06162022	LORNG_SB06013_0-1_06162022	LORNG_SB06013_3-4_06162022	LORNG_SB16013_0-1_06162022	LORNG_SB16013_8-10_06162022	LORNG_SB16014_0-1_06162022	LORNG_SB16014_8-10_06162022			LORNG_SB18020_0-1_06162022	LORNG_SB18020_8-10_06162022
QC Code				N	FD	N	N	N	N	N	N	N	N			N	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier			Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	J	0.97 J	0.98 U	0.97 U	1.1 U	1 U	4	1.1 U	1.5 J	1 J			1.1 U	1.1 U
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.1 U	0.98 U	0.97 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U	1.1 U			1.1 U	1.1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96691											
			Location	SB17004		SB17004		SB17005		SB17005		SB17006		SB17006	
			Sample Date	6/19/2022		6/19/2022		6/19/2022		6/19/2022		6/19/2022		6/19/2022	
			Sample ID	LORNG_SB17004_0-1_06192022		LORNG_SB17004_8-10_06192022		LORNG_SB17005_0-1_06192022		LORNG_SB17005_8-10_06192022		LORNG_SB17006_0-1_06192022		LORNG_SB17006_8-10_06192022	
			QC Code	N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	3.6		1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	J	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	0.86	J	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	3.2		1.1	U	0.72	J	1.1	U	3.4		1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	0.84	J	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.1	U	1.1	U	1.2	U	1.1	U	1.3	U	1.1	U

			SDG	FA96691											
			Location	SB17007		SB17007									
			Sample Date	6/19/2022		6/19/2022									
			Sample ID	LORNG_SB17007_0-1_06192022		LORNG_SB17007_8-10_06192022									
			QC Code	N		N									
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier								
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.3	U	1.1	U								
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.3	U	1.1	U								
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.3	U	1.1	U								
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.3	U	1.1	U								
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.3	U	1.1	U								
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.3	U	1.1	U								
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.3	U	1.1	U								
		Perfluorobutanoic acid (PFBA)	UG/KG	1.3	U	1.1	U								
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.3	U	1.1	U								
		Perfluorodecanoic acid (PFDA)	UG/KG	1.3	U	1.1	U								
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.3	U	1.1	U								
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.3	U	1.1	U								
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.3	U	1.1	U								
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.3	U	1.1	U								
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.3	U	1.1	U								
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.3	U	1.1	U								
		Perfluorononanoic acid (PFNA)	UG/KG	1.3	U	1.1	U								
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.3	U	1.1	U								
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	1.9	J	1.1	U								
		Perfluorooctanoic acid (PFOA)	UG/KG	1.3	U	1.1	U								
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.3	U	1.1	U								
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.3	U	1.1	U								
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.3	U	1.1	U								
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.3	U	1.1	U								
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.3	U	1.1	U								

Notes:
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Date: 9/28/22
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA96691																	
		Location		SB20005		SB20006			SB20007		SB20008		SB21001								
		Sample Date		6/18/2022		6/18/2022			6/18/2022		6/18/2022		6/18/2022								
		Sample ID		LORNG_SB20005_0-1_06182022	LORNG_SB20005_2-3_06182022	LORNG_SB20006_0-1_06182022	LORNG_SB20006_0-1_06182022FD	LORNG_SB20006_8-10_06182022	LORNG_SB20007_0-1_06182022	LORNG_SB20007_8-10_06182022	LORNG_SB20008_0-1_06182022	LORNG_SB20008_8-10_06182022	LORNG_SB21001_0-1_06182022	LORNG_SB21001_0-1_06182022FD	LORNG_SB21001_2-3_06182022							
		QC Code		N	N	N	FD	N	N	N	N	N	N	FD	N							
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	UJ	1.2	UJ	1.2	U	1.3	U	1.1	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	UJ	1.2	U	1.2	UJ	6.6	U	1.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	UJ	1.2	UJ	1.2	U	1.3	U	1.1	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorobutanoic acid (PFBA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	0.93	J	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorodecanoic acid (PFDA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	J	0.77	J	0.77	J	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.2	J	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorononanoic acid (PFNA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	UJ	1.3	U	1.1	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	7.1		1.1	U	5.9		4.8		1.2	U	27.4		11.5		21.9		2.5		3.3		2.9		1.1	U
		Perfluorooctanoic acid (PFOA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	0.83	J	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.4	U	1.2	U	1.2	U	1.3	U	1.1	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96691													
			Location	SB21002		SB24001		SB24002		SB24004		SB24005					
			Sample Date	6/19/2022		6/18/2022		6/18/2022		6/18/2022		6/18/2022					
			Sample ID	LORNG_SB21002_0-1_06192022		LORNG_SB21002_1-2_06192022		LORNG_SB24001_0-1_06182022		LORNG_SB24001_3-4_06182022		LORNG_SB24002_0-1_06182022		LORNG_SB24002_8-10_06182022		LORNG_SB24004_0-1_06182022	
			QC Code	N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	2	U	2.9	U	1.1	UJ	1.2	UJ	1.1	U	1.1	U	1.2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	9.8	U	14	U	1.1	U	1.2	U	1.1	U	1.1	U	6.1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	2	U	2.9	U	1.1	UJ	1.2	UJ	1.1	U	1.1	U	1.2	U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorobutanoic acid (PFBA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorodecane sulfonate (PFDS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorodecanoic acid (PFDA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorododecanoic acid (PFDoA)	UG/KG	9.8	U	14	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	2	J	4.9	J	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorohexanoic acid (PFHxA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorononanoic acid (PFNA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	24.8		25.8		1.1	U	1.2	U	1.1	U	1.1	U	1	J
		Perfluorooctanoic acid (PFOA)	UG/KG	2	U	1.6	J	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluoropentanoic acid (PFPeA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	9.8	U	14	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	2	U	2.9	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U

			SDG	FA96691													
			Location	SB24004		SB24005											
			Sample Date	6/18/2022		6/18/2022											
			Sample ID	LORNG_SB24004_2-3_06182022		LORNG_SB24005_0-1_06182022		LORNG_SB24005_8-10_06182022									
			QC Code	N		N		N									
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier								
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	4.5	U	1.1	U	1.1	U								
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	4.5	U	1.1	U	1.1	U								
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	4.5	R	1.1	U	1.1	U								
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorobutanoic acid (PFBA)	UG/KG	4.5	U	1.1	U	1.1	U								
		Perfluorodecane sulfonate (PFDS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorodecanoic acid (PFDA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorododecanoic acid (PFDoA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluoroheptanoic acid (PFHpA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	4.5	U	1.1	U	1.1	U								
		Perfluorohexanoic acid (PFHxA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorononanesulfonic acid (PFNS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorononanoic acid (PFNA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorooctanoic acid (PFOA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluoropentanoic acid (PFPeA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	4.5	U	1.1	U	1.1	U								
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	4.5	UJ	1.1	U	1.1	U								
		Perfluoroundecanoic acid (PFUnA)	UG/KG	4.5	UJ	1.1	U	1.1	U								

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				FA96691			FA96726									
Location				3010	SS21001		SS21002		SB12005			SB12006			SB12007	
Sample Date				2022	6/18/2022		6/18/2022		6/20/2022			6/20/2022			6/20/2022	
Sample ID				S18010_0-92022	LORNG_SS21001_0-1_06182022		LORNG_SS21002_0-1_06182022		LORNG_SB12005_0-1_06202022	LORNG_SB12005_8-10_06202022	LORNG_SB12005_8-10_06202022FD	LORNG_SB12006_0-1_06202022	LORNG_SB12006_8-10_06202022		LORNG_SB12007_0-1_06202022	LORNG_SB12007_8-10_06202022
QC Code				N	N		N		N	N	FD	N	N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	UG/KG	U	1.3	U	7.2	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	5.5 U	1.1 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	UJ	1.1 U	1.1 U
		Perfluorobutanesulfonic acid (PFBS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorobutanoic acid (PFBA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorodecane sulfonate (PFDS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	0.67 J	1.1	U	1.1 U	1.1 U
		Perfluorodecanoic acid (PFDA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorododecanoic acid (PFDoA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	5.5 U	1.1 U
		Perfluoroheptanesulfonic acid (PFHpS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluoroheptanoic acid (PFHpA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorohexanesulfonic acid (PFHxS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	0.8 J	1.1	U	1.1 U	1.1 J
		Perfluorohexanoic acid (PFHxA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorononanesulfonic acid (PFNS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorononanoic acid (PFNA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorooctane sulfonamide (PFOSA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorooctanesulfonic acid (PFOS)	UG/KG	J	3.4		10.5		19.9	1.1 U	1.1 U	13.7	1.1	U	11.1	10.7
		Perfluorooctanoic acid (PFOA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluoropentanesulfonic acid (PFPeS)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluoropentanoic acid (PFPeA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorotetradecanoic acid (PFTeDA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U
		Perfluorotridecanoic acid (PFTrDA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	5.5 U	1.1 U
		Perfluoroundecanoic acid (PFUnA)	UG/KG	U	1.3	U	1.4	U	1.2 U	1.1 U	1.1 U	1.3 U	1.1	U	1.1 U	1.1 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectiv
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

| | | SDG | | FA96726 | | |

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA95871								FA95916						FA95934	
			Location	FIELDQC								FIELDQC						FIELDQC	
			Sample Date	5/17/2022						5/19/2022		5/20/2022		5/21/2022			5/22/2022	5/23/2022	
			Sample ID	LORNG_EB100_05172022		LORNG_EB101_05172022		LORNG_EB102_05172022		LORNG_EB103_05172022		LORNG_EB104_05192022		LORNG_EB105_05192022		LORNG_EB106_05202022		LORNG_EB107_05212022	
			QC Code	EB		EB		EB		EB		EB		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	4	U	4	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	4	U	4	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	4	U	4	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	4	U	4	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	20	U	20	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4	U	4	U	4	U	4	U	3.7	U	4	U	4	U	4	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorobutanoic acid (PFBA)	NG/L	29.8		2.6	J	4	U	4	U	3.7	U	4	U	4	U	4	U
		Perfluorodecane sulfonate (PFDS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2.5	J	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.3	J	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.5	J	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U

			SDG	FA95916				FA95934	
			Location	FIELDQC				FIELDQC	
			Sample Date	5/21/2022		5/22/2022		5/23/2022	
			Sample ID	LORNG_EB108_05212022		LORNG_EB109_05222022		LORNG_EB110_05232022	LORNG_EB111_05232022
			QC Code	EB		EB		EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4	U	3.7	U	4 U	4 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4	U	3.7	U	4 U	4 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4	U	3.7	U	4 U	4 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4	U	3.7	U	4 U	4 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20	U	19	U	4 U	4 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4	U	3.7	U	4 U	4 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorobutanoic acid (PFBA)	NG/L	4	U	3.7	U	4 U	4 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorononanoic acid (PFNA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	1.9	U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	1.9	U	2 U	2 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	FA95977	FA96109		FA96203		FA96238			FA96351		FA96551	FA96627
		Location	FIELDQC	FIELDQC		FIELDQC		FIELDQC			FIELDQC		FIELDQC	FIELDQC
		Sample Date	5/24/2022	5/31/2022	6/1/2022	6/1/2022	6/2/2022	6/3/2022	6/4/2022	6/5/2022	6/6/2022	6/7/2022	6/14/2022	6/15/2022
		Sample ID	LORNG_EB112_05232022	LORNG_EB113_05312022	LORNG_EB114_06012022	LORNG_EB115_06012022	LORNG_EB116_06022022	LORNG_EB117_06032022	LORNG_EB118_06042022	LORNG_EB119_06052022	LORNG_EB120_06062022	LORNG_EB121_06072022	LORNG_EB122_06142022	LORNG_EB123_06152022
		QC Code	EB	EB	EB	EB	EB	EB	EB	EB	EB	EB	EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	4 U	4 U	3.5 U	4 U	4 U	4 U	4 U	4.3 U	4 U	4 U	3.6 U	3.6 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	4 U	4 U	3.5 U	4 U	119	39.2	12.8	13.2	4 U	4 U	3.6 U	3.6 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4 U	4 U	3.5 U	4 U	7.9 J	3.7 J	4 U	4.3 U	4 U	4 U	3.6 U	3.6 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	4 U	4 U	3.5 U	4 U	4 U	4 U	4 U	4.3 U	4 U	4 U	3.6 U	3.6 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	4 U	4 U	3.5 U	4 U	4 U	4 U	4 U	4.3 U	4 U	4 U	3.6 U	18 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	4 U	4 U	3.5 U	4 U	4 U	4 U	4 U	4.3 U	4 U	4 U	3.6 U	3.6 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorobutanoic acid (PFBA)	NG/L	4 U	4 U	3.5 U	4 U	4 U	4 U	4 U	4.3 U	4 U	4 U	3.6 U	3.6 U
		Perfluorodecane sulfonate (PFDS)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	2 U	1.8 U	2 U	1.9 J	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	1.6 J	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2 U	1.8 U	1.8 U	2 U	16.6	2 U	1.3 J	2 J	2 U	2 U	1.8 U	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	2 U	2 U	1.8 U	2 U	1.4 J	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	1.8 U	2 U	2 U	2 U	2 U	2.1 U	2 U	2 U	1.8 U	1.8 U

Notes:
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J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FA96640		FA96691						FA96726			
			Location	FIELDQC		FIELDQC						FIELDQC			
			Sample Date	6/16/2022		6/18/2022		6/19/2022				6/20/2022			
			Sample ID	LORNG_EB124_06162022		LORNG_EB125_06182022		LORNG_EB126_06192022		LORNG_EB127_06192022		LORNG_EB128_06202022			
			QC Code	EB		EB		EB		EB		EB			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.7	U	3.7	U	4	U	4	U		
		Perfluorodecane sulfonate (PFDS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.9	U	2	U	2	U		

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Prepared by: AKN
Date: 9/28/22
Checked by: ALJ
Date: 3/8/2023

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
169966	LYDKHN	T	1150731	LORNG_SB11002_0-1_052222_C	TOTAL ORGANIC CARBON	31,600		31,600	J	LDD	MG/KG
170363	LYDKHN	T	1157246	LORNG_SB21001_0-1_06182022_C	TOTAL ORGANIC CARBON	143,000		143,000	J	FDD	MG/KG
			1157248	LORNG_SB21001_0-1_06182022FD_C	TOTAL ORGANIC CARBON	42,400		42,400	J	FDD	MG/KG
FA95871	M537	T	FA95871-15	LORNG_SB07004_0-1_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.4	J	1.4	J	RIS	UG/KG
			FA95871-16	LORNG_SB07004_8-10_05202022	Perfluorooctanesulfonic acid (PFOS)	3.8	=	3.8	J	FDD	UG/KG
			FA95871-17	LORNG_SB07004_8-10_05202022FD	Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.4	J	FDD	UG/KG
			FA95871-28	LORNG_SB07007_8-9_05202022	6:2 Fluorotelomer sulfonate (6:2 FTS)	73.5	=	73.5	J	MSL	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2.4	U	2.4	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	25.7	=	25.7	J	MSL	UG/KG
					Perfluorooctanoic acid (PFOA)	23.5	=	23.5	J	MSL	UG/KG
			FA95871-22	LORNG_SB08002_0-1_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.1	U	6.1	UJ	RIS	UG/KG
			FA95871-5	LORNG_SB08003_0-1_05172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
			FA95871-6	LORNG_SB08003_0-1_05172022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA95871-8	LORNG_SB08004_0-1_05172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
			FA95871-10	LORNG_SB08005_0-1_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.3	U	6.3	UJ	RIS	UG/KG
			FA95871-11	LORNG_SB08005_8-10_05192022	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	1.1	UJ	RIS	UG/KG
FA95916	M537	T	FA95916-7	LORNG_SB07011_0-1_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.4	U	5.4	UJ	RIS	UG/KG
			FA95916-9	LORNG_SB07012_0-1_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.3	U	5.3	UJ	RIS	UG/KG
FA95934	M537	T	FA95934-13	LORNG_SB13002_0-1_05232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG

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FA96238	M537	T	FA96238-7	LORNG_SB05011_0-1_06032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96238-12	LORNG_SB05013_0-1_06032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96238-14	LORNG_SB05014_0-1_06032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96238-16	LORNG_SB05015_0-1_06032022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96238-29	LORNG_SB09005_8-10_06052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96238-30	LORNG_SB09006_0-1_06042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96238-32	LORNG_SB09007_0-1_06042022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
FA96351	M537	T	FA96351-14	LORNG_SB01007_0-1_06072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
			FA96351-16	LORNG_SB01008_0-1_06072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.8	U	6.8	UJ	RIS	UG/KG
			FA96351-3	LORNG_SB01011_0-1_06062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.2	U	5.2	UJ	RIS	UG/KG
			FA96351-21	LORNG_SB01012_0-1_06062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6	U	6	UJ	RIS	UG/KG
			FA96351-28	LORNG_SB01013_0-1_06072022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	6.3	U	6.3	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	6.3	U	6.3	UJ	RIS	UG/KG
			FA96351-9	LORNG_SB18018_0-1_06062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96351-12	LORNG_SB18019_8-10_06062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.3	U	5.3	UJ	RIS	UG/KG

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FA96551	M537	T	FA96551-1	LORNG_SB18013_0-1_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96551-8	LORNG_SB22001_7-8_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.99	U	0.99	UJ	RIS	UG/KG
			FA96551-10	LORNG_SB22002_6-7_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96551-11	LORNG_SB22003_0-1_06142022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
FA96616	M537	T	FA96616-2	LORNG_SB16006_8-10_06172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.8	U	4.8	UJ	RIS	UG/KG
FA96627	M537	T	FA96627-3	LORNG_SB18008_0-1_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	0.96	U	0.96	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.96	U	0.96	UJ	RIS	UG/KG
			FA96627-5	LORNG_SB18009_0-1_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96627-7	LORNG_SB18010_0-1_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1	U	1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	UG/KG
			FA96627-8	LORNG_SB18010_8-10_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96627-9	LORNG_SB18011_0-1_06152022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.1	U	5.1	UJ	RIS	UG/KG
FA96691	M537	T	FA96691-7	LORNG_SB20008_0-1_06182022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.4	U	1.4	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.4	U	1.4	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.4	U	1.4	UJ	RIS	UG/KG

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			FA96691-8	LORNG_SB20008_8-10_06182022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG

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FA96691	M537	T	FA96691-9	LORNG_SB21001_0-1_06182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96691-15	LORNG_SB24001_0-1_06182022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.1	U	1.1	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96691-16	LORNG_SB24001_3-4_06182022	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96691-18	LORNG_SB24004_2-3_06182022	4:2 Fluorotelomer sulfonate (4:2 FTS)	4.5	U	4.5	UJ	RIS	UG/KG
					8:2 Fluorotelomer sulfonate (8:2 FTS)	4.5	U	4.5	UJ	RIS	UG/KG
					N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4.5	U	4.5	R	RIS	UG/KG
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorobutanesulfonic acid (PFBS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorodecane sulfonate (PFDS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorodecanoic acid (PFDA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorododecanoic acid (PFDoA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluoroheptanoic acid (PFHpA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorohexanoic acid (PFHxA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorononanesulfonic acid (PFNS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorononanoic acid (PFNA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorooctanesulfonic acid (PFOS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorooctanoic acid (PFOA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluoropentanesulfonic acid (PFPeS)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluoropentanoic acid (PFPeA)	4.5	U	4.5	UJ	RIS	UG/KG
					Perfluorotridecanoic acid (PFTrDA)	4.5	U	4.5	UJ	RIS	UG/KG

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					Perfluoroundecanoic acid (PFUnA)	4.5	U	4.5	UJ	RIS	UG/KG

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FA96691	M537	T	FA96691-38	LORNG_SS18002_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.8	U	5.8	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96691-39	LORNG_SS18003_0-1_06192022	Perfluorooctane sulfonamide (PFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96691-40	LORNG_SS18004_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.8	U	5.8	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.2	U	1.2	UJ	RIS	UG/KG
			FA96691-41	LORNG_SS18005_0-1_06192022	Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96691-42	LORNG_SS18006_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	5.5	U	5.5	UJ	RIS	UG/KG
					Perfluorooctane sulfonamide (PFOSA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96691-43	LORNG_SS18007_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6	U	6	UJ	RIS	UG/KG
			FA96691-44	LORNG_SS18008_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.2	U	6.2	UJ	RIS	UG/KG
			FA96691-45	LORNG_SS18009_0-1_06192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
FA96726	M537	T	FA96726-15	LORNG_SB12006_8-10_06202022	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	1.1	UJ	RIS	UG/KG
			FA96726-22	LORNG_SS13005_0-1_06202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
			FA96726-10	LORNG_SS19011_0-1_06202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.3	U	1.3	UJ	RIS	UG/KG
SP2461	BNASIMD	T	SP2461-1	LORNG_SB08001_0-1_05192022_K	DIBENZ(A,H)ANTHRACENE	12	U	12	UJ	CCL	UG/KG
					INDENO(1,2,3-C,D)PYRENE	12	U	12	UJ	CCL	UG/KG
			SP2461-2	LORNG_SB08001_8-10_05192022_K	CHRYSENE	23		23	J	CVHL	UG/KG
					DIBENZ(A,H)ANTHRACENE	9.8	U	9.8	UJ	CCL	UG/KG
					INDENO(1,2,3-C,D)PYRENE	42		42	J	CCL	UG/KG

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SP2461	BNASIMD	T			PYRENE	37		37	J	CVHL	UG/KG
			SP2461-3	LORNG_SB08006_0-1_05192022_K	DIBENZ(A,H)ANTHRACENE	11	U	11	UJ	CCL	UG/KG
					INDENO(1,2,3-C,D)PYRENE	11	U	11	UJ	CCL	UG/KG
			SP2461-4	LORNG_SB08006_8-10_05192022_K	DIBENZ(A,H)ANTHRACENE	27		27	J	CCL	UG/KG
					INDENO(1,2,3-C,D)PYRENE	390		390	J	CCL	UG/KG

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SP2461	SW6010C	T	SP2461-1	LORNG_SB08001_0-1_05192022_K	ANTIMONY	0.65	UN*	0.65	UJ	MSL, MSD	MG/KG
					ARSENIC	10.5	N	10.5	J	MSH, CVHL	MG/KG
					BARIUM	44.4	*E	44.4	J	MSD	MG/KG
					BERYLLIUM	0.551	*	0.551	J	MSD	MG/KG
					CALCIUM	2,160	N*	2,160	J	MSD	MG/KG
					CHROMIUM, TOTAL	31.9	NE	31.9	J	MSL	MG/KG
					COBALT	12.9	*	12.9	J	MSD, CVHL	MG/KG
					COPPER	26.9	N	26.9	J	MSL	MG/KG
					LEAD	17.1	N	17.1	J	MSH, MSL	MG/KG
					MANGANESE	527	N*	527	J	MSD	MG/KG
					NICKEL	41.8	N	41.8	J	MSL	MG/KG
					POTASSIUM	1,140	N*	1,140	J	MSH, MSL, MSD	MG/KG
					VANADIUM	25.8	*	25.8	J	MSD	MG/KG
					ZINC	70.1	NE	70.1	J	MSL	MG/KG
			SP2461-2	LORNG_SB08001_8-10_05192022_K	ARSENIC	8.29		8.29	J	CVHL	MG/KG
					COBALT	14.4		14.4	J	CVHL	MG/KG
			SP2461-3	LORNG_SB08006_0-1_05192022_K	ARSENIC	45.8		45.8	J	CVHL	MG/KG
					COBALT	10.2		10.2	J	CVHL	MG/KG
			SP2461-4	LORNG_SB08006_8-10_05192022_K	ARSENIC	7.96		7.96	J	CVHL	MG/KG
					COBALT	14.4		14.4	J	CVHL	MG/KG

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	SW8081B	T	SP2461-3	LORNG_SB08006_0-1_05192022_K	METHOXYCHLOR	8.8	U	8.8	UJ	CCL	UG/KG
					P,P'-DDT	25		25	J	CCL	UG/KG

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SP2461	SW8081B	T	SP2461-4	LORNG_SB08006_8-10_05192022_K	ALDRIN	0.84	U	0.84	UJ	SGL	UG/KG
					ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	0.84	U	0.84	UJ	SGL	UG/KG
					ALPHA ENDOSULFAN	0.84	U	0.84	UJ	SGL	UG/KG
					BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	0.84	U	0.84	UJ	SGL	UG/KG
					BETA ENDOSULFAN	1.6	U	1.6	UJ	SGL	UG/KG
					CIS-CHLORDANE	0.84	U	0.84	UJ	SGL	UG/KG
					DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	0.84	U	0.84	UJ	SGL	UG/KG
					DIELDRIN	1.6	U	1.6	UJ	SGL	UG/KG
					ENDOSULFAN SULFATE	1.6	U	1.6	UJ	SGL	UG/KG
					ENDRIN	1.6	U	1.6	UJ	SGL	UG/KG
					ENDRIN ALDEHYDE	1.6	U	1.6	UJ	SGL	UG/KG
					ENDRIN KETONE	1.6	U	1.6	UJ	SGL	UG/KG
					GAMMA BHC (LINDANE)	0.84	U	0.84	UJ	SGL	UG/KG
					GAMMA-CHLORDANE	0.84	U	0.84	UJ	SGL	UG/KG
					HEPTACHLOR	0.84	U	0.84	UJ	SGL	UG/KG
					HEPTACHLOR EPOXIDE	0.84	U	0.84	UJ	SGL	UG/KG
					METHOXYCHLOR	8.4	U	8.4	UJ	CCL, SGL	UG/KG
					P,P'-DDD	1.6	U	1.6	UJ	SGL	UG/KG
					P,P'-DDE	1.6	U	1.6	UJ	SGL	UG/KG
					P,P'-DDT	1.6	U	1.6	UJ	CCL, SGL	UG/KG

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					TOXAPHENE	16	U	16	UJ	SGL	UG/KG
	SW8082A	T	SP2461-3	LORNG_SB08006_0-1_05192022_K	PCB-1254 (AROCLOR 1254)	8.8	U	8.8	UJ	CCL	UG/KG
					PCB-1260 (AROCLOR 1260)	8.8	U	8.8	UJ	CCL	UG/KG
					PCB-1262 (AROCLOR 1262)	8.8	U	8.8	UJ	CCL	UG/KG
					PCB-1268 (AROCLOR 1268)	8.8	U	8.8	UJ	CCL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2461	SW8082A	T	SP2461-4	LORNG_SB08006_8-10_05192022_K	PCB, TOTAL	77	U	77	UJ	SGL	UG/KG
					PCB-1016 (AROCLOR 1016)	8.4	U	8.4	UJ	SGL	UG/KG
					PCB-1221 (AROCLOR 1221)	8.4	U	8.4	UJ	SGL	UG/KG
					PCB-1232 (AROCLOR 1232)	9.9	U	9.9	UJ	SGL	UG/KG
					PCB-1242 (AROCLOR 1242)	8.4	U	8.4	UJ	SGL	UG/KG
					PCB-1248 (AROCLOR 1248)	8.4	U	8.4	UJ	SGL	UG/KG
					PCB-1254 (AROCLOR 1254)	8.4	U	8.4	UJ	CCL, SGL	UG/KG
					PCB-1260 (AROCLOR 1260)	8.4	U	8.4	UJ	CCL, SGL	UG/KG
					PCB-1262 (AROCLOR 1262)	8.4	U	8.4	UJ	CCL, SGL	UG/KG
					PCB-1268 (AROCLOR 1268)	8.4	U	8.4	UJ	CCL, SGL	UG/KG
	SW8260C	T	SP2461-1	LORNG_SB08001_0-1_05192022_K	ACETONE	34	J	34	U	TBL	UG/KG
					CHLOROFORM	2.4	J	5.9	U	LBM, TBL	UG/KG
			SP2461-2	LORNG_SB08001_8-10_05192022_K	CHLOROFORM	0.8	J	2	U	LBM, TBL	UG/KG
			SP2461-3	LORNG_SB08006_0-1_05192022_K	CHLOROFORM	1.1	J	2.7	U	LBM, TBL	UG/KG
					TOLUENE	7.7		7.7	U	TBG	UG/KG
			SP2461-4	LORNG_SB08006_8-10_05192022_K	CHLOROFORM	0.9	J	2.6	U	LBM, TBL	UG/KG
	SW8270D	T	SP2461-1	LORNG_SB08001_0-1_05192022_K	BENZOIC ACID	720	ULL	720	R	LCL	UG/KG
			SP2461-2	LORNG_SB08001_8-10_05192022_K	BENZOIC ACID	600	ULL	600	R	LCL	UG/KG
			SP2461-3	LORNG_SB08006_0-1_05192022_K	BENZOIC ACID	690	ULL	690	R	LCL	UG/KG
			SP2461-4	LORNG_SB08006_8-10_05192022_K	BENZOIC ACID	610	ULL	610	R	LCL	UG/KG
					BENZO(A)PYRENE	1,400	L	1,400	J	LCL	UG/KG

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SP2522	BNASIMD	T	SP2522-1	LORNG_SB11002_0-1_05222022_K	BENZO(K)FLUORANTHENE	540	L	540	J	LCL	UG/KG
			SP2522-2	LORNG_SB11002_8-10_05222022_K	BENZO(A)PYRENE	10	UL	10	UJ	LCL	UG/KG
					BENZO(B)FLUORANTHENE	2.9	J	10	U	LBM	UG/KG
					BENZO(K)FLUORANTHENE	10	UL	10	UJ	LCL	UG/KG
	SW6010C	T	SP2522-2	LORNG_SB11002_8-10_05222022_K	POTASSIUM	1,300	B	1,300	J	LBM	MG/KG
	SW8260C	T	SP2522-1	LORNG_SB11002_0-1_05222022_K	CHLOROFORM	0.97	J	3.2	U	LBM, TBL	UG/KG
			SP2522-2	LORNG_SB11002_8-10_05222022_K	CHLOROFORM	0.71	J	2.1	U	LBM, TBL	UG/KG

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SP2522	SW8270D	T	SP2522-1	LORNG_SB11002_0-1_05222022_K	2,4-DIMETHYLPHENOL	280	UL	280	UJ	LCL, LCD	UG/KG
					4-CHLOROANILINE	280	UL	280	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	SVLL, LCL	UG/KG
			SP2522-2	LORNG_SB11002_8-10_05222022_K	2,4-DIMETHYLPHENOL	260	UL	260	UJ	LCL, LCD	UG/KG
					4-CHLOROANILINE	260	UL	260	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	SVLL, LCL	UG/KG
SP2566	BNASIMD	T	SP2566-1	LORNG_SB13008_0-1_05242022_K	BENZO(K)FLUORANTHENE	250		250	J	LCD	UG/KG
			SP2566-3	LORNG_SB13017_0-1_05242022_K	BENZO(K)FLUORANTHENE	250		250	J	LCD	UG/KG
	SW6010C	T	SP2566-1	LORNG_SB13008_0-1_05242022_K	ANTIMONY	0.99	UN	0.99	UJ	MSL	MG/KG
					ARSENIC	7.46	N*	7.46	J	MSL, MSD	MG/KG
					BARIUM	72.8	N	72.8	J	MSL	MG/KG
					CHROMIUM, TOTAL	37.6	N*	37.6	J	MSH, MSL	MG/KG
					COPPER	22.7	N*	22.7	J	MSH, MSL, MSD	MG/KG
					LEAD	38	N	38	J	MSL	MG/KG
					NICKEL	43.8	N*	43.8	J	MSL, MSD	MG/KG
					POTASSIUM	1420	N	1420	J	MSL	MG/KG
					SODIUM	59.2	J	59.2	U	LBM	MG/KG
					VANADIUM	25.6	N*	25.6	J	MSH, MSD	MG/KG
					ZINC	73.1	NEB	73.1	J	MSL	MG/KG

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			SP2566-2	LORNG_SB13008_8-10_05242022_K	SODIUM	53.6	J	53.6	U	LBM	MG/KG
			SP2566-3	LORNG_SB13017_0-1_05242022_K	SODIUM	59.1	J	59.1	U	LBM	MG/KG
			SP2566-4	LORNG_SB13017_8-10_05242022_K	SODIUM	43.3	J	43.3	U	LBM	MG/KG

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			SP2566-1	LORNG_SB13008_0-1_05242022_K	CHLOROFORM	0.81	J	2.2	U	LBM, TBL	UG/KG
					1,1,1,2-TETRACHLOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1,1-TRICHLOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1,2-TRICHLOROETHANE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					1,1-DICHLOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1-DICHLOROETHENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,1-DICHLOROPROPENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2,3-TRICHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2,3-TRICHLOROPROPANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2,4-TRICHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	2.4	U	2.4	UJ	SGL	UG/KG
SP2566	SW8260C	T	SP2566-2	LORNG_SB13008_8-10_05242022_K	1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					1,2-DICHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2-DICHLOROETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,2-DICHLOROPROPANE	51		51	J	SGH, SGL, ISL	UG/KG
					1,3-DICHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					1,3-DICHLOROPROPANE	2.4	U	2.4	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG

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					2,2-DICHLOROPROPANE	2.4	U	2.4	UJ	SGL	UG/KG
					2-CHLOROTOLUENE	2.4	U	2.4	UJ	SGL	UG/KG
					2-HEXANONE	12	U	12	UJ	SGL	UG/KG
					4-CHLOROTOLUENE	2.4	U	2.4	UJ	SGL	UG/KG
					ACETONE	3,600	E	3,600	J	SGH, SGL, CRR	UG/KG
					BENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					BROMOBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					BROMOCHLOROMETHANE	2.4	U	2.4	UJ	SGL	UG/KG
					BROMODICHLOROMETHANE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					BROMOFORM	2.4	U	2.4	UJ	SGL	UG/KG
					BROMOMETHANE	4.8	U	4.8	UJ	SGL	UG/KG
					CARBON DISULFIDE	2.4	U	2.4	UJ	SGL	UG/KG
					CARBON TETRACHLORIDE	2.4	U	2.4	UJ	SGL	UG/KG
					CHLOROBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					CHLOROETHANE	4.8	U	4.8	UJ	SGL	UG/KG
					CHLOROFORM	2.4	U	2.4	UJ	SGL	UG/KG
					CHLOROMETHANE	4.8	U	4.8	UJ	SGL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	2.4	U	2.4	UJ	SGL	UG/KG
SP2566	SW8260C	T	SP2566-2	LORNG_SB13008_8-10_05242022_K	CIS-1,3-DICHLOROPROPENE	2.4	U	2.4	UJ	SGL, ISL	UG/KG

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	CYCLOHEXANE	1,900	E	1,900	J	SGH, SGL, CRR	UG/KG
					DIBROMOCHLOROMETHANE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					DIBROMOMETHANE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					DICHLORODIFLUOROMETHANE	4.8	U	4.8	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	2.4	U	2.4	UJ	SGL	UG/KG
					IODOMETHANE (METHYL IODIDE)	2.4	U	2.4	UJ	SGL	UG/KG
					ISOPROPYLBENZENE (CUMENE)	300	E	300	J	SGH, SGL, CRR	UG/KG
					METHYL ACETATE	2.9	U	2.9	UJ	SGL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	12	U	12	UJ	SGL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	12	U	12	UJ	SGL, ISL	UG/KG
					METHYLENE CHLORIDE	12	U	12	UJ	SGL	UG/KG
					NAPHTHALENE	6.7		6.7	J	SGH, SGL	UG/KG
					N-BUTYLBENZENE	200	E	200	J	SGH, SGL, CRR	UG/KG
					N-PROPYLBENZENE	330	E	330	J	SGH, SGL, CRR	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	2.4	U	2.4	UJ	SGL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	310	E	310	J	SGH, SGL, CRR	UG/KG
					SEC-BUTYLBENZENE	230	E	230	J	SGH, SGL, CRR	UG/KG

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SP2566	SW8260C	T	SP2566-2	LORNG_SB13008_8-10_05242022_K	STYRENE	2.4	U	2.4	UJ	SGL	UG/KG
					T-BUTYLBENZENE	2.4	U	2.4	UJ	SGL	UG/KG
					TERT-BUTYL METHYL ETHER	2.4	U	2.4	UJ	SGL	UG/KG
					TETRACHLOROETHYLENE(PCE)	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					TOLUENE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					TRANS-1,2-DICHLOROETHENE	2.4	U	2.4	UJ	SGL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	2.4	U	2.4	UJ	SGL, ISL	UG/KG
					TRICHLOROETHYLENE (TCE)	47		47	J	SGH, SGL, ISL	UG/KG
					TRICHLOROFLUOROMETHANE	4.8	U	4.8	UJ	SGL	UG/KG
					VINYL ACETATE	2.4	U	2.4	UJ	SGL	UG/KG
					VINYL CHLORIDE	4.8	U	4.8	UJ	SGL	UG/KG
			SP2566-3	LORNG_SB13017_0-1_05242022_K	CHLOROFORM	1.1	J	3.4	U	LBM, TBL	UG/KG
			SP2566-4	LORNG_SB13017_8-10_05242022_K	CHLOROFORM	0.71	J	2.1	U	LBM, TBL	UG/KG
	SW8270D	T	SP2566-1	LORNG_SB13008_0-1_05242022_K	4-CHLOROANILINE	260	ULL	260	UJ	SVLL, LCL	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	LCL	UG/KG
			SP2566-2	LORNG_SB13008_8-10_05242022_K	4-CHLOROANILINE	250	ULL	250	UJ	LCL	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	SVLL, LCL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	200	JB	250	U	LBM	UG/KG
SP2566	SW8270D	T	SP2566-3	LORNG_SB13017_0-1_05242022_K	4-CHLOROANILINE	270	ULL	270	UJ	LCL	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	SVLL, LCL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	150	JB	270	U	LBM	UG/KG

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			SP2566-4	LORNG_SB13017_8-10_05242022_K	4-CHLOROANILINE	280	ULL	280	UJ	SVLL, LCL	UG/KG
					BENZIDINE	1,300	ULL	1,300	R	LCL	UG/KG
SP2692	BNASIMD	T	SP2692-1	LORNG_SB06010_0-1_05312022_K	BENZO(K)FLUORANTHENE	430		430	J	LCD	UG/KG
	SW8260C	T	SP2692-1	LORNG_SB06010_0-1_05312022_K	CHLOROFORM	0.86	J	3.3	U	LBM, TBL	UG/KG
			SP2692-2	LORNG_SB06010_5-6_05312022_K	CHLOROFORM	0.59	J	2.5	U	LBM, TBL	UG/KG
	SW8270D	T	SP2692-1	LORNG_SB06010_0-1_05312022_K	4-CHLOROANILINE	350	ULL	350	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,600	ULL	1,600	R	SVLL, LCL	UG/KG
			SP2692-2	LORNG_SB06010_5-6_05312022_K	4-CHLOROANILINE	280	ULL	280	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,300	ULL	1,300	R	SVLL, LCL	UG/KG
SP2721	SW8260C	T	SP2721-2	LORNG_SB13018_8-10_06012022_K	CHLOROFORM	0.5	J	2.3	U	LBM, TBL	UG/KG
			SP2721-3	LORNG_SB13018_8-10_06012022FDK	CHLOROFORM	0.46	J	2	U	LBM, TBL	UG/KG
	SW8270D	T	SP2721-1	LORNG_SB13018_0-1_06012022_K	4-CHLOROANILINE	250	ULL	250	UJ	LCL	UG/KG
					BENZIDINE	1,100	ULL	1,100	R	LCL	UG/KG
			SP2721-2	LORNG_SB13018_8-10_06012022_K	4-CHLOROANILINE	260	ULL	260	UJ	LCL	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	LCL	UG/KG
SP2809	BNASIMD	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	1,4-DIOXANE (P-DIOXANE)	48	ULL	48	UJ	LCL	UG/KG
			SP2809-2	LORNG_SB09006_8-10_06042022_K	1,4-DIOXANE (P-DIOXANE)	51	ULL	51	UJ	LCL	UG/KG
	SW7471B	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	MERCURY	0.034	N*	0.034	J	MSH, MSD	MG/KG
	SW8260C	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	1,1,1,2-TETRACHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,1,1-TRICHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG

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					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,1,2-TRICHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
SP2809	SW8260C	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	1,1-DICHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,1-DICHLOROETHENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,1-DICHLOROPROPENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2,3-TRICHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2,3-TRICHLOROPROPANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2,4-TRICHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2,4-TRIMETHYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	1.6	U	1.6	UJ	ISL	UG/KG
					1,2-DICHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2-DICHLOROETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,2-DICHLOROPROPANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	1.6	U	1.6	UJ	ISL	UG/KG
					1,3-DICHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					1,3-DICHLOROPROPANE	1.6	U	1.6	UJ	ISL	UG/KG
					1,4-DICHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					2,2-DICHLOROPROPANE	1.6	U	1.6	UJ	ISL	UG/KG
					2-CHLOROTOLUENE	1.6	U	1.6	UJ	ISL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					2-HEXANONE	8	U	8	UJ	ISL	UG/KG
					4-CHLOROTOLUENE	1.6	U	1.6	UJ	ISL	UG/KG
					ACETONE	8	U	8	UJ	ISL	UG/KG
					BENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					BROMOBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					BROMOCHLOROMETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					BROMODICHLOROMETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					BROMOFORM	1.6	U	1.6	UJ	ISL	UG/KG
					BROMOMETHANE	3.2	U	3.2	UJ	ISL	UG/KG
					CARBON DISULFIDE	1.6	U	1.6	UJ	ISL	UG/KG
					CARBON TETRACHLORIDE	1.6	U	1.6	UJ	ISL	UG/KG
					CHLOROBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					CHLOROETHANE	3.2	U	3.2	UJ	ISL	UG/KG
					CHLOROFORM	0.4	J	1.6	UJ	LBM, TBL, ISL	UG/KG
					CHLOROMETHANE	3.2	U	3.2	UJ	ISL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	1.6	U	1.6	UJ	ISL	UG/KG
					CIS-1,3-DICHLOROPROPENE	1.6	U	1.6	UJ	ISL	UG/KG
					CYCLOHEXANE	1.6	U	1.6	UJ	ISL	UG/KG
					DIBROMOCHLOROMETHANE	1.6	U	1.6	UJ	ISL	UG/KG
					DIBROMOMETHANE	1.6	U	1.6	UJ	ISL	UG/KG

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2809	SW8260C	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	DICHLORODIFLUOROMETHANE	3.2	U	3.2	UJ	ISL	UG/KG
					ETHYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					HEXACHLOROBUTADIENE	1.6	U	1.6	UJ	ISL	UG/KG
					IODOMETHANE (METHYL IODIDE)	1.6	U	1.6	UJ	ISL	UG/KG
					ISOPROPYLBENZENE (CUMENE)	1.6	U	1.6	UJ	ISL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	3.2	U	3.2	UJ	ISL	UG/KG
					METHYL ACETATE	1.9	U	1.9	UJ	ISL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	8	U	8	UJ	ISL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	8	U	8	UJ	ISL	UG/KG
					METHYLCYCLOHEXANE	1.6	U	1.6	UJ	ISL	UG/KG
					METHYLENE CHLORIDE	8	U	8	UJ	ISL	UG/KG
					NAPHTHALENE	1.6	U	1.6	UJ	ISL	UG/KG
					N-BUTYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					N-PROPYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	1.6	U	1.6	UJ	ISL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	1.6	U	1.6	UJ	ISL	UG/KG
					SEC-BUTYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					STYRENE	1.6	U	1.6	UJ	ISL	UG/KG
					T-BUTYLBENZENE	1.6	U	1.6	UJ	ISL	UG/KG
					TERT-BUTYL METHYL ETHER	1.6	U	1.6	UJ	ISL	UG/KG

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/9/2023

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2809	SW8260C	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	TETRACHLOROETHYLENE(PCE)	1.6	U	1.6	UJ	ISL	UG/KG
					TOLUENE	1.6	U	1.6	UJ	ISL	UG/KG
					TRANS-1,2-DICHLOROETHENE	1.6	U	1.6	UJ	ISL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	1.6	U	1.6	UJ	ISL	UG/KG
					TRICHLOROETHYLENE (TCE)	1.6	U	1.6	UJ	ISL	UG/KG
					TRICHLOROFLUOROMETHANE	3.2	U	3.2	UJ	ISL	UG/KG
					VINYL ACETATE	1.6	U	1.6	UJ	ISL	UG/KG
					VINYL CHLORIDE	3.2	U	3.2	UJ	ISL	UG/KG
			SP2809-2	LORNG_SB09006_8-10_06042022_K	CHLOROFORM	0.24	J	1	U	LBM, TBL	UG/KG
	SW8270D	T	SP2809-1	LORNG_SB09006_0-1_06042022_K	BENZIDINE	1,100	ULL	1,100	R	LCL, LCD	UG/KG
			SP2809-2	LORNG_SB09006_8-10_06042022_K	1,2,4-TRICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,2-DIPHENYLHYDRAZINE	510	U	510	UJ	SGL	UG/KG
					1,3-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					1-METHYLNAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	250	U	250	UJ	SGL	UG/KG
					2,3,4,6-TETRACHLOROPHENOL	250	U	250	UJ	SGL	UG/KG
					2,4,5-TRICHLOROPHENOL	630	U	630	UJ	SGL	UG/KG
					2,4,6-TRICHLOROPHENOL	250	U	250	UJ	SGL	UG/KG

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					2,4-DICHLOROPHENOL	250	U	250	UJ	SGL	UG/KG
					2,4-DIMETHYLPHENOL	250	U	250	UJ	SGL	UG/KG
					2,4-DINITROPHENOL	630	U	630	UJ	SGL	UG/KG
					2,4-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2,6-DINITROTOLUENE	250	U	250	UJ	SGL	UG/KG
					2-CHLORONAPHTHALENE	250	U	250	UJ	SGL	UG/KG
					2-CHLOROPHENOL	250	U	250	UJ	SGL	UG/KG
					2-METHYLPHENOL (O-CRESOL)	250	U	250	UJ	SGL	UG/KG
					2-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					2-NITROPHENOL	250	U	250	UJ	SGL	UG/KG
					3,3'-DICHLOROBENZIDINE	250	U	250	UJ	SGL	UG/KG
					3-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					4,6-DINITRO-2-METHYLPHENOL	630	U	630	UJ	SGL	UG/KG
					4-BROMOPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-CHLORO-3-METHYLPHENOL	250	U	250	UJ	SGL	UG/KG
					4-CHLOROANILINE	250	U	250	UJ	SGL	UG/KG
					4-CHLOROPHENYL PHENYL ETHER	250	U	250	UJ	SGL	UG/KG
					4-NITROANILINE	630	U	630	UJ	SGL	UG/KG
					4-NITROPHENOL	630	U	630	UJ	SGL	UG/KG
					BENZALDEHYDE	250	U	250	UJ	SGL	UG/KG

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Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2809	SW8270D	T	SP2809-2	LORNG_SB09006_8-10_06042022_K	BENZIDINE	1,200	ULL	1,200	R	LCL, LCD, SGL	UG/KG
					BENZOIC ACID	630	U	630	UJ	SGL	UG/KG
					BENZYL ALCOHOL	510	U	510	UJ	SGL	UG/KG
					BENZYL BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					BIPHENYL (DIPHENYL)	250	U	250	UJ	SGL	UG/KG
					BIS(2-CHLOROETHOXY) METHANE	250	U	250	UJ	SGL	UG/KG
					BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	250	U	250	UJ	SGL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	250	U	250	UJ	SGL	UG/KG
					CARBAZOLE	250	U	250	UJ	SGL	UG/KG
					CRESOLS, M & P	250	U	250	UJ	SGL	UG/KG
					DIBENZOFURAN	250	U	250	UJ	SGL	UG/KG
					DIETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DIMETHYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-BUTYL PHTHALATE	250	U	250	UJ	SGL	UG/KG
					DI-N-OCTYLPHTHALATE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBENZENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	250	U	250	UJ	SGL	UG/KG
					HEXACHLOROETHANE	250	U	250	UJ	SGL	UG/KG
SP2809	SW8270D	T	SP2809-2	LORNG_SB09006_8-10_06042022_K	ISOPHORONE	250	U	250	UJ	SGL	UG/KG

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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					NITROBENZENE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIMETHYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODI-N-PROPYLAMINE	250	U	250	UJ	SGL	UG/KG
					N-NITROSODIPHENYLAMINE	250	U	250	UJ	SGL	UG/KG
					PHENOL	250	U	250	UJ	SGL	UG/KG
SP2868	BNASIMD	T	SP2868-1	LORNG_SB01016-0-1_06072022_K	1,4-DIOXANE (P-DIOXANE)	70	UL	70	UJ	LCL	UG/KG
			SP2868-2	LORNG_SB01016-8-10_06072022_K	1,4-DIOXANE (P-DIOXANE)	57	ULMM	57	UJ	LCL, MSL	UG/KG
					ANTHRACENE	11	UM	11	UJ	MSL	UG/KG
					BENZO(A)PYRENE	11	UM	11	UJ	MSL	UG/KG
					BENZO(K)FLUORANTHENE	11	UM	11	UJ	MSL	UG/KG
					CHRYSENE	11	UM	11	UJ	MSL	UG/KG
			SP2868-3	LORNG_SB01016-8-10_06072022FDK	1,4-DIOXANE (P-DIOXANE)	55	UL	55	UJ	LCL, MSL	UG/KG
					ANTHRACENE	11	U	11	UJ	MSL	UG/KG
					BENZO(A)PYRENE	11	U	11	UJ	MSL	UG/KG
					BENZO(K)FLUORANTHENE	11	U	11	UJ	MSL	UG/KG
					CHRYSENE	11	U	11	UJ	MSL	UG/KG
	SW6010C	T	SP2868-1	LORNG_SB01016-0-1_06072022_K	ANTIMONY	0.57	UN	0.57	UJ	MSL	MG/KG
					LEAD	16.4	N	16.4	J	MSL	MG/KG
					POTASSIUM	1260	N	1260	J	MSH	MG/KG

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Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					ZINC	68.3	NE	68.3	J	MSH	MG/KG

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2868	SW8260C	T	SP2868-6	LORNG_SB01009-0-1_06072022_K	CHLOROFORM	0.56	J	2.6	U	LBM, TBL	UG/KG
			SP2868-7	LORNG_SB01009-8-10_06072022_K	CHLOROFORM	0.28	J	1.2	U	LBM, TBL	UG/KG
			SP2868-5	LORNG_SB01014-0-1_06062022_K	CHLOROFORM	0.45	J	2.2	U	LBM, TBL	UG/KG
			SP2868-8	LORNG_SB01014-5-7_06062022_K	CHLOROFORM	0.37	J	1.7	U	LBM, TBL	UG/KG
			SP2868-1	LORNG_SB01016-0-1_06072022_K	CHLOROFORM	0.69	J	3.6	U	LBM, TBL	UG/KG
			SP2868-2	LORNG_SB01016-8-10_06072022_K	1,1,1,2-TETRACHLOROETHANE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,1,1-TRICHLOROETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,1,2-TRICHLOROETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,1-DICHLOROETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,1-DICHLOROETHENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,1-DICHLOROPROPENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,2,3-TRICHLOROBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,2,3-TRICHLOROPROPANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,2,4-TRICHLOROBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,2,4-TRIMETHYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,2-DICHLOROBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,2-DICHLOROETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG

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Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					1,2-DICHLOROPROPANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,3-DICHLOROBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					1,3-DICHLOROPROPANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					1,4-DICHLOROBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					2,2-DICHLOROPROPANE	2.3	UM	2.3	UJ	MSL	UG/KG
					2-CHLOROTOLUENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					2-HEXANONE	11	UMM	11	UJ	MSL	UG/KG
					4-CHLOROTOLUENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					ACETONE	34		34	J	FDD	UG/KG
					BENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					BROMOBENZENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					BROMOCHLOROMETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					BROMODICHLOROMETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					BROMOFORM	2.3	UMM	2.3	UJ	MSL	UG/KG
					CARBON TETRACHLORIDE	2.3	UMM	2.3	UJ	MSL	UG/KG
					CHLOROBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
SP2868	SW8260C	T	SP2868-2	LORNG_SB01016-8-10_06072022_K	CHLOROFORM	0.41	JMM	2.3	UJ	LBM, TBL, MSL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					CIS-1,3-DICHLOROPROPENE	2.3	UMM	2.3	UJ	MSL	UG/KG

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Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					DIBROMOCHLOROMETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					DIBROMOMETHANE	2.3	UMM	2.3	UJ	MSL	UG/KG
					ETHYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					HEXACHLOROBUTADIENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					IODOMETHANE (METHYL IODIDE)	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					ISOPROPYLBENZENE (CUMENE)	2.3	UMM	2.3	UJ	MSL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	4.5	UMM	4.5	UJ	MSL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	11	UMM	11	UJ	MSL	UG/KG
					METHYLCYCLOHEXANE	2.3	UM	2.3	UJ	MSL, MSD	UG/KG
					METHYLENE CHLORIDE	11	UMM	11	UJ	MSL	UG/KG
					NAPHTHALENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					N-BUTYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					N-PROPYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	2.3	UMM	2.3	UJ	MSL	UG/KG
					SEC-BUTYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					STYRENE	2.3	UMM	2.3	UJ	MSL, MSD	UG/KG
			SP2868-2	LORNG_SB01016-8-10_06072022_K	T-BUTYLBENZENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					TERT-BUTYL METHYL ETHER	2.3	UMM	2.3	UJ	MSL	UG/KG

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Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2868	SW8260C	T			TETRACHLOROETHYLENE(PCE)	2.3	UMM	2.3	UJ	MSL	UG/KG
					TOLUENE	2.5	JMM	2.5	J	MSL	UG/KG
					TRANS-1,2-DICHLOROETHENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	2.3	UMM	2.3	UJ	MSL	UG/KG
					TRICHLOROETHYLENE (TCE)	2.3	UMM	2.3	UJ	MSL	UG/KG
					VINYL ACETATE	2.3	UMM	2.3	R	MSL	UG/KG
			SP2868-3	LORNG_SB01016-8-10_06072022FDK	1,1,1,2-TETRACHLOROETHANE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					1,1,1-TRICHLOROETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,1,2-TRICHLOROETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,1-DICHLOROETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,1-DICHLOROETHENE	3.3	U	3.3	UJ	MSL	UG/KG
					1,1-DICHLOROPROPENE	3.3	U	3.3	UJ	MSL	UG/KG
					1,2,3-TRICHLOROBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					1,2,3-TRICHLOROPROPANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,2,4-TRICHLOROBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					1,2,4-TRIMETHYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	3.3	U	3.3	UJ	MSL	UG/KG
					1,2-DICHLOROBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG

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Table 3 - Summary of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2868	SW8260C	T	SP2868-3	LORNG_SB01016-8-10_06072022FDK	1,2-DICHLOROETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,2-DICHLOROPROPANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					1,3-DICHLOROBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					1,3-DICHLOROPROPANE	3.3	U	3.3	UJ	MSL	UG/KG
					1,4-DICHLOROBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					2,2-DICHLOROPROPANE	3.3	U	3.3	UJ	MSL	UG/KG
					2-CHLOROTOLUENE	3.3	U	3.3	UJ	MSL	UG/KG
					2-HEXANONE	16	U	16	UJ	MSL	UG/KG
					4-CHLOROTOLUENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					ACETONE	63		63	J	FDD	UG/KG
					BENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					BROMOBENZENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					BROMOCHLOROMETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					BROMODICHLOROMETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					BROMOFORM	3.3	U	3.3	UJ	MSL	UG/KG
					CARBON TETRACHLORIDE	3.3	U	3.3	UJ	MSL	UG/KG
					CHLOROBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					CHLOROFORM	0.63	J	3.3	UJ	LBM, TBL, MSL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					CIS-1,2-DICHLOROETHYLENE	3.3	U	3.3	UJ	MSL	UG/KG
					CIS-1,3-DICHLOROPROPENE	3.3	U	3.3	UJ	MSL	UG/KG
					DIBROMOCHLOROMETHANE	3.3	U	3.3	UJ	MSL	UG/KG
SP2868	SW8260C	T	SP2868-3	LORNG_SB01016-8-10_06072022FDK	DIBROMOMETHANE	3.3	U	3.3	UJ	MSL	UG/KG
					ETHYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					HEXACHLOROBUTADIENE	3.3	U	3.3	UJ	MSL	UG/KG
					IODOMETHANE (METHYL IODIDE)	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					ISOPROPYLBENZENE (CUMENE)	3.3	U	3.3	UJ	MSL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	6.5	U	6.5	UJ	MSL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	16	U	16	UJ	MSL	UG/KG
					METHYLCYCLOHEXANE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					METHYLENE CHLORIDE	16	U	16	UJ	MSL	UG/KG
					NAPHTHALENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					N-BUTYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					N-PROPYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	3.3	U	3.3	UJ	MSL	UG/KG
					SEC-BUTYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG
					STYRENE	3.3	U	3.3	UJ	MSL, MSD	UG/KG
					T-BUTYLBENZENE	3.3	U	3.3	UJ	MSL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					TERT-BUTYL METHYL ETHER	3.3	U	3.3	UJ	MSL	UG/KG
					TETRACHLOROETHYLENE(PCE)	3.3	U	3.3	UJ	MSL	UG/KG
					TOLUENE	3.3	U	3.3	UJ	MSL	UG/KG
					TRANS-1,2-DICHLOROETHENE	3.3	U	3.3	UJ	MSL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	3.3	U	3.3	UJ	MSL	UG/KG
					TRICHLOROETHYLENE (TCE)	3.3	U	3.3	UJ	MSL	UG/KG
					VINYL ACETATE	3.3	U	3.3	R	MSL	UG/KG

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			SP2868-6	LORNG_SB01009-0-1_06072022_K	BENZIDINE	1,300	UL	1,300	R	LCL	UG/KG
			SP2868-7	LORNG_SB01009-8-10_06072022_K	BENZIDINE	1,200	UL	1,200	R	LCL	UG/KG
			SP2868-5	LORNG_SB01014-0-1_06062022_K	BENZIDINE	1,200	UL	1,200	R	LCL	UG/KG
			SP2868-8	LORNG_SB01014-5-7_06062022_K	BENZIDINE	1,300	UL	1,300	R	LCL	UG/KG
			SP2868-1	LORNG_SB01016-0-1_06072022_K	BENZIDINE	1,600	UL	1,600	R	LCL	UG/KG
			SP2868-2	LORNG_SB01016-8-10_06072022_K	BENZIDINE	1,300	ULMM	1,300	R	LCL	UG/KG
					1,2,4-TRICHLOROBENZENE	280	U	280	UJ	SGL	UG/KG
					1,2-DICHLOROBENZENE	280	U	280	UJ	SGL	UG/KG
					1,2-DIPHENYLHYDRAZINE	550	U	550	UJ	SGL	UG/KG
					1,3-DICHLOROBENZENE	280	U	280	UJ	SGL	UG/KG
					1,4-DICHLOROBENZENE	280	U	280	UJ	SGL	UG/KG
					1-METHYLNAPHTHALENE	280	U	280	UJ	SGL	UG/KG
					2,2'-OXYBIS(1-CHLORO)PROPANE	280	U	280	UJ	SGL	UG/KG
					2,3,4,6-TETRACHLOROPHENOL	280	U	280	UJ	SGL	UG/KG
					2,4,5-TRICHLOROPHENOL	680	U	680	UJ	SGL	UG/KG
SP2868	SW8270D	T			2,4,6-TRICHLOROPHENOL	280	U	280	UJ	SGL	UG/KG
					2,4-DICHLOROPHENOL	280	U	280	UJ	SGL	UG/KG
			SP2868-3	LORNG_SB01016-8-10_06072022FDK	2,4-DIMETHYLPHENOL	280	U	280	UJ	SGL	UG/KG
					2,4-DINITROPHENOL	680	U	680	UJ	SGL	UG/KG
					2,4-DINITROTOLUENE	280	U	280	UJ	SGL	UG/KG
					2,6-DINITROTOLUENE	280	U	280	UJ	SGL	UG/KG
					2-CHLORONAPHTHALENE	280	U	280	UJ	SGL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					2-CHLOROPHENOL	280	U	280	UJ	SGL	UG/KG
					2-METHYLPHENOL (O-CRESOL)	280	U	280	UJ	SGL	UG/KG
					2-NITROANILINE	680	U	680	UJ	SGL	UG/KG
					2-NITROPHENOL	280	U	280	UJ	SGL	UG/KG
					3,3'-DICHLOROBENZIDINE	280	U	280	UJ	SGL	UG/KG
					3-NITROANILINE	680	U	680	UJ	SGL	UG/KG
					4,6-DINITRO-2-METHYLPHENOL	680	U	680	UJ	SGL	UG/KG
					4-BROMOPHENYL PHENYL ETHER	280	U	280	UJ	SGL	UG/KG
					4-CHLORO-3-METHYLPHENOL	280	U	280	UJ	SGL	UG/KG
					4-CHLOROANILINE	280	U	280	UJ	SGL	UG/KG
					4-CHLOROPHENYL PHENYL ETHER	280	U	280	UJ	SGL	UG/KG
					4-NITROANILINE	680	U	680	UJ	SGL	UG/KG
					4-NITROPHENOL	680	U	680	UJ	SGL	UG/KG
					BENZALDEHYDE	280	UL	280	UJ	SGL	UG/KG
					BENZIDINE	1,200	UL	1,200	R	LCL, SGL	UG/KG
					BENZOIC ACID	680	U	680	UJ	SGL	UG/KG
					BENZYL ALCOHOL	550	U	550	UJ	SGL	UG/KG
					BENZYL BUTYL PHTHALATE	280	U	280	UJ	SGL	UG/KG
					BIPHENYL (DIPHENYL)	280	U	280	UJ	SGL	UG/KG
					BIS(2-CHLOROETHOXY) METHANE	280	U	280	UJ	SGL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2868	SW8270D	T	SP2868-3	LORNG_SB01016-8-10_06072022FDK	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	280	U	280	UJ	SGL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	280	U	280	UJ	SGL	UG/KG
					CARBAZOLE	280	U	280	UJ	SGL	UG/KG
					CRESOLS, M & P	280	U	280	UJ	SGL	UG/KG
					DIBENZOFURAN	280	U	280	UJ	SGL	UG/KG
					DIETHYL PHTHALATE	280	U	280	UJ	SGL	UG/KG
					DIMETHYL PHTHALATE	280	U	280	UJ	SGL	UG/KG
					DI-N-BUTYL PHTHALATE	280	U	280	UJ	SGL	UG/KG
					DI-N-OCTYLPHTHALATE	280	U	280	UJ	SGL	UG/KG
					HEXACHLOROBENZENE	280	U	280	UJ	SGL	UG/KG
					HEXACHLOROBUTADIENE	280	U	280	UJ	SGL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	280	U	280	UJ	SGL	UG/KG
					HEXACHLOROETHANE	280	U	280	UJ	SGL	UG/KG
					ISOPHORONE	280	U	280	UJ	SGL	UG/KG
					NITROBENZENE	280	U	280	UJ	SGL	UG/KG
SP2868	SW8270D	T	SP2868-3	LORNG_SB01016-8-10_06072022FDK	N-NITROSODIMETHYLAMINE	280	U	280	UJ	SGL	UG/KG
					N-NITROSODI-N-PROPYLAMINE	280	U	280	UJ	SGL	UG/KG
					N-NITROSODIPHENYLAMINE	280	U	280	UJ	SGL	UG/KG
					PHENOL	280	U	280	UJ	SGL	UG/KG
					BENZO(B)FLUORANTHENE	5.8	J	5.8	J	LCD	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	BNASIMD	T	SP3101-1	LORNG_SB16006_0-1_06172022_K	BENZO(G,H,I)PERYLENE	3.4	J	3.4	J	LCD	UG/KG
					BENZO(K)FLUORANTHENE	11	UL	11	UJ	LCL, LCD	UG/KG
					CHRYSENE	3.6	JL	3.6	J	LCL, LCD	UG/KG
					FLUORANTHENE	2.9	J	2.9	J	LCD	UG/KG
					PHENANTHRENE	2.4	J	2.4	J	LCD	UG/KG
					PYRENE	2.7	J	2.7	J	LCD	UG/KG
			SP3101-2	LORNG_SB16006_8-10_06172022_K	2-METHYLNAPHTHALENE	11	J	11	J	LCD	UG/KG
					BENZO(K)FLUORANTHENE	11	UL	11	UJ	LCL, LCD	UG/KG
					CHRYSENE	11	UL	11	UJ	LCL, LCD	UG/KG
					PHENANTHRENE	2.3	J	2.3	J	LCD	UG/KG
			SP3101-3	LORNG_SB16011_0-1_06172022_K	1,4-DIOXANE (P-DIOXANE)	59	U	59	UJ	LCL, LCD	UG/KG
					2-METHYLNAPHTHALENE	2.7	J	2.7	J	LCD	UG/KG
					BENZO(A)ANTHRACENE	2.9	J	2.9	J	LCD	UG/KG
					BENZO(B)FLUORANTHENE	9.1	J	9.1	J	LCD	UG/KG
					BENZO(G,H,I)PERYLENE	12	J	12	J	LCD	UG/KG
					BENZO(K)FLUORANTHENE	12	UL	12	UJ	LCL, LCD	UG/KG
					CHRYSENE	4.2	JL	4.2	J	LCL, LCD	UG/KG
					FLUORANTHENE	2.8	J	2.8	J	LCD	UG/KG
					PYRENE	3.3	J	3.3	J	LCD	UG/KG

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			SP3101-4	LORNG_SB16011_8-10_06172022_K	1,4-DIOXANE (P-DIOXANE)	53	U	53	UJ	LCL, LCD	UG/KG
					2-METHYLNAPHTHALENE	5.7	J	5.7	J	LCD	UG/KG
					BENZO(K)FLUORANTHENE	10	UL	10	UJ	LCL, LCD	UG/KG
					CHRYSENE	10	UL	10	UJ	LCL, LCD	UG/KG

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SP3101	SW8081B	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	ALDRIN	0.88	U	0.88	UJ	SGL	UG/KG
					ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	0.88	U	0.88	UJ	SGL	UG/KG
					ALPHA ENDOSULFAN	0.88	U	0.88	UJ	SGL	UG/KG
					BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	0.88	U	0.88	UJ	SGL	UG/KG
					BETA ENDOSULFAN	1.7	U	1.7	UJ	SGL	UG/KG
					CIS-CHLORDANE	0.88	U	0.88	UJ	SGL	UG/KG
					DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	0.88	U	0.88	UJ	SGL	UG/KG
					DIELDRIN	1.7	U	1.7	UJ	SGL	UG/KG
					ENDOSULFAN SULFATE	1.7	U	1.7	UJ	SGL	UG/KG
					ENDRIN	1.7	U	1.7	UJ	SGL	UG/KG
					ENDRIN ALDEHYDE	1.7	U	1.7	UJ	SGL	UG/KG
					ENDRIN KETONE	1.7	U	1.7	UJ	SGL	UG/KG
					GAMMA BHC (LINDANE)	0.88	U	0.88	UJ	SGL	UG/KG
					GAMMA-CHLORDANE	0.88	U	0.88	UJ	SGL	UG/KG
					HEPTACHLOR	0.88	U	0.88	UJ	SGL	UG/KG
					HEPTACHLOR EPOXIDE	0.88	U	0.88	UJ	SGL	UG/KG
					METHOXYCHLOR	8.8	U	8.8	UJ	SGL	UG/KG
					P,P'-DDD	1.7	U	1.7	UJ	SGL	UG/KG
					P,P'-DDE	1.7	U	1.7	UJ	SGL	UG/KG

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					P,P'-DDT	1.7	U	1.7	UJ	SGL	UG/KG
					TOXAPHENE	17	U	17	UJ	SGL	UG/KG
	SW8082A	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	PCB, TOTAL	80	U	80	UJ	SGL	UG/KG
					PCB-1016 (AROCLOR 1016)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1221 (AROCLOR 1221)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1232 (AROCLOR 1232)	10	U	10	UJ	SGL	UG/KG
					PCB-1242 (AROCLOR 1242)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1248 (AROCLOR 1248)	8.8	U	8.8	UJ	SGL	UG/KG
	SW8082A	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	PCB-1254 (AROCLOR 1254)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1260 (AROCLOR 1260)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1262 (AROCLOR 1262)	8.8	U	8.8	UJ	SGL	UG/KG
					PCB-1268 (AROCLOR 1268)	8.8	U	8.8	UJ	SGL	UG/KG
					1,1,1,2-TETRACHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1,1-TRICHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1,2-TRICHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1-DICHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1-DICHLOROETHENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,1-DICHLOROPROPENE	2.6	U	2.6	UJ	HHL	UG/KG

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SP3101	SW8260C	T	SP3101-1	LORNG_SB16006_0-1_06172022_K	1,2,3-TRICHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2,3-TRICHLOROPROPANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2,4-TRICHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2,4-TRIMETHYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2.6	U	2.6	UJ	HHL	UG/KG
					1,2-DICHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2-DICHLOROETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,2-DICHLOROPROPANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	2.6	U	2.6	UJ	HHL	UG/KG
					1,3-DICHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					1,3-DICHLOROPROPANE	2.6	U	2.6	UJ	HHL	UG/KG
					1,4-DICHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					2,2-DICHLOROPROPANE	2.6	U	2.6	UJ	HHL	UG/KG
					2-CHLOROTOLUENE	2.6	U	2.6	UJ	HHL	UG/KG
					2-HEXANONE	13	U	13	UJ	HHL	UG/KG
					4-CHLOROTOLUENE	2.6	U	2.6	UJ	HHL	UG/KG
					ACETONE	23	J	23	J	HHL	UG/KG
					BENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					BROMOBENZENE	2.6	U	2.6	UJ	HHL	UG/KG

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
Date: 3/9/2023

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-1	LORNG_SB16006_0-1_06172022_K	BROMOCHLOROMETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					BROMODICHLOROMETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					BROMOFORM	2.6	U	2.6	UJ	HHL	UG/KG
					BROMOMETHANE	5.2	U	5.2	UJ	HHL	UG/KG
					CARBON DISULFIDE	2.6	U	2.6	UJ	HHL	UG/KG
					CARBON TETRACHLORIDE	2.6	U	2.6	UJ	HHL	UG/KG
					CHLOROBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					CHLOROETHANE	5.2	U	5.2	UJ	HHL	UG/KG
					CHLOROFORM	0.98	J	2.6	UJ	HHL, LBM, TBL	UG/KG
					CHLOROMETHANE	5.2	U	5.2	UJ	HHL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	2.6	U	2.6	UJ	HHL	UG/KG
					CIS-1,3-DICHLOROPROPENE	2.6	U	2.6	UJ	HHL	UG/KG
					CYCLOHEXANE	2.6	U	2.6	UJ	HHL	UG/KG
					DIBROMOCHLOROMETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					DIBROMOMETHANE	2.6	U	2.6	UJ	HHL	UG/KG
					DICHLORODIFLUOROMETHANE	5.2	U	5.2	UJ	HHL	UG/KG
					ETHYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					HEXACHLOROBUTADIENE	2.6	U	2.6	UJ	HHL	UG/KG
					IODOMETHANE (METHYL IODIDE)	2.6	U	2.6	UJ	HHL	UG/KG

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Date:12/14/22
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Date: 3/9/2023

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					ISOPROPYLBENZENE (CUMENE)	2.6	U	2.6	UJ	HHL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	5.2	U	5.2	UJ	HHL	UG/KG
					METHYL ACETATE	3.1	U	3.1	UJ	HHL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	13	U	13	UJ	HHL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	13	U	13	UJ	HHL	UG/KG
					METHYLCYCLOHEXANE	2.6	U	2.6	UJ	HHL	UG/KG
					METHYLENE CHLORIDE	140		140	UJ	HHL, TBG	UG/KG
					NAPHTHALENE	2.6	U	2.6	UJ	HHL	UG/KG
					N-BUTYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					N-PROPYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	2.6	U	2.6	UJ	HHL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	2.6	U	2.6	UJ	HHL	UG/KG
					SEC-BUTYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					STYRENE	2.6	U	2.6	UJ	HHL	UG/KG
			SP3101-1	LORNG_SB16006_0-1_06172022_K	T-BUTYLBENZENE	2.6	U	2.6	UJ	HHL	UG/KG
					TERT-BUTYL METHYL ETHER	2.6	U	2.6	UJ	HHL	UG/KG
					TETRACHLOROETHYLENE(PCE)	2.6	U	2.6	UJ	HHL	UG/KG
					TOLUENE	2.6	U	2.6	UJ	HHL	UG/KG
					TRANS-1,2-DICHLOROETHENE	2.6	U	2.6	UJ	HHL	UG/KG
SP3101	SW8260C	T			TRANS-1,3-DICHLOROPROPENE	2.6	U	2.6	UJ	HHL	UG/KG

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					TRICHLOROETHYLENE (TCE)	2.6	U	2.6	UJ	HHL	UG/KG
					TRICHLOROFLUOROMETHANE	5.2	U	5.2	UJ	HHL	UG/KG
					VINYL ACETATE	2.6	U	2.6	UJ	HHL	UG/KG
					VINYL CHLORIDE	5.2	U	5.2	UJ	HHL	UG/KG
			SP3101-2	LORNG_SB16006_8-10_06172022_K	1,1,1,2-TETRACHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,1-TRICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2-TRICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROETHENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,3-TRICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,3-TRICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,4-TRICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,4-TRIMETHYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-1	LORNG_SB16006_8-10_06172022_K	1,2-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	1.9	U	1.9	UJ	HHL	UG/KG
					1,3-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,3-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,4-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					2,2-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					2-CHLOROTOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
					2-HEXANONE	9.3	U	9.3	UJ	HHL	UG/KG
					4-CHLOROTOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
					ACETONE	22		22	J	HHL	UG/KG
					BENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOCHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMODICHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOFORM	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOMETHANE	3.7	U	3.7	UJ	HHL	UG/KG
					CARBON DISULFIDE	1.9	U	1.9	UJ	HHL	UG/KG
					CARBON TETRACHLORIDE	1.9	U	1.9	UJ	HHL	UG/KG
					CHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					CHLOROETHANE	3.7	U	3.7	UJ	HHL	UG/KG
					CHLOROFORM	1.9	U	1.9	UJ	HHL	UG/KG
SP3101	SW8260C	T	SP3101-1	LORNG_SB16006_8-10_06172022_K	CHLOROMETHANE	3.7	U	3.7	UJ	HHL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	1.9	U	1.9	UJ	HHL	UG/KG
					CIS-1,3-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG
					CYCLOHEXANE	1.9	U	1.9	UJ	HHL	UG/KG
					DIBROMOCHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					DIBROMOMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					DICHLORODIFLUOROMETHANE	3.7	U	3.7	UJ	HHL	UG/KG
					ETHYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					HEXACHLOROBUTADIENE	1.9	U	1.9	UJ	HHL	UG/KG
					IODOMETHANE (METHYL IODIDE)	1.9	U	1.9	UJ	HHL	UG/KG
					ISOPROPYLBENZENE (CUMENE)	1.9	U	1.9	UJ	HHL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	3.7	U	3.7	UJ	HHL	UG/KG
					METHYL ACETATE	2.2	U	2.2	UJ	HHL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	9.3	U	9.3	UJ	HHL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	9.3	U	9.3	UJ	HHL	UG/KG
					METHYLCYCLOHEXANE	1.9	U	1.9	UJ	HHL	UG/KG
					METHYLENE CHLORIDE	120	E	120	UJ	HHL, TBG, CRR	UG/KG

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					NAPHTHALENE	1.9	U	1.9	UJ	HHL	UG/KG
					N-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					N-PROPYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	1.9	U	1.9	UJ	HHL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	1.9	U	1.9	UJ	HHL	UG/KG
					SEC-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					STYRENE	1.9	U	1.9	UJ	HHL	UG/KG
					T-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					TERT-BUTYL METHYL ETHER	1.9	U	1.9	UJ	HHL	UG/KG
					TETRACHLOROETHYLENE(PCE)	1.9	U	1.9	UJ	HHL	UG/KG
			SP3101-1	LORNG_SB16006_8-10_06172022_K	TOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
					TRANS-1,2-DICHLOROETHENE	1.9	U	1.9	UJ	HHL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG
					TRICHLOROETHYLENE (TCE)	1.9	U	1.9	UJ	HHL	UG/KG
					TRICHLOROFLUOROMETHANE	3.7	U	3.7	UJ	HHL	UG/KG
					VINYL ACETATE	1.9	U	1.9	UJ	HHL	UG/KG
					VINYL CHLORIDE	3.7	U	3.7	UJ	HHL	UG/KG
					1,1,1,2-TETRACHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1,1-TRICHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-3	LORNG_SB16011_0-1_06172022_K	1,1,2,2-TETRACHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1,2-TRICHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1-DICHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1-DICHLOROETHENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,1-DICHLOROPROPENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2,3-TRICHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2,3-TRICHLOROPROPANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2,4-TRICHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2,4-TRIMETHYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2.3	U	2.3	UJ	HHL	UG/KG
					1,2-DICHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2-DICHLOROETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,2-DICHLOROPROPANE	2.3	U	2.3	UJ	HHL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	2.3	U	2.3	UJ	HHL	UG/KG
					1,3-DICHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					1,3-DICHLOROPROPANE	2.3	U	2.3	UJ	HHL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-3	LORNG_SB16011_0-1_06172022_K	1,4-DICHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					2,2-DICHLOROPROPANE	2.3	U	2.3	UJ	HHL	UG/KG
					2-CHLOROTOLUENE	2.3	U	2.3	UJ	HHL	UG/KG
					2-HEXANONE	11	U	11	UJ	HHL	UG/KG
					4-CHLOROTOLUENE	2.3	U	2.3	UJ	HHL	UG/KG
					ACETONE	75		75	J	HHL	UG/KG
					BENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					BROMOBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					BROMOCHLOROMETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					BROMODICHLOROMETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					BROMOFORM	2.3	U	2.3	UJ	HHL	UG/KG
					BROMOMETHANE	4.5	U	4.5	UJ	HHL	UG/KG
					CARBON DISULFIDE	2.3	U	2.3	UJ	HHL	UG/KG
					CARBON TETRACHLORIDE	2.3	U	2.3	UJ	HHL	UG/KG
					CHLOROBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					CHLOROETHANE	4.5	U	4.5	UJ	HHL	UG/KG
					CHLOROFORM	0.87	J	2.3	UJ	HHL, LBM, TBL	UG/KG
					CHLOROMETHANE	4.5	U	4.5	UJ	HHL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	2.3	U	2.3	UJ	HHL	UG/KG
					CIS-1,3-DICHLOROPROPENE	2.3	U	2.3	UJ	HHL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					CYCLOHEXANE	2.3	U	2.3	UJ	HHL	UG/KG
					DIBROMOCHLOROMETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					DIBROMOMETHANE	2.3	U	2.3	UJ	HHL	UG/KG
					DICHLORODIFLUOROMETHANE	4.5	U	4.5	UJ	HHL	UG/KG
					ETHYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					HEXACHLOROBUTADIENE	2.3	U	2.3	UJ	HHL	UG/KG
					IODOMETHANE (METHYL IODIDE)	2.3	U	2.3	UJ	HHL	UG/KG
					ISOPROPYLBENZENE (CUMENE)	2.3	U	2.3	UJ	HHL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	4.5	U	4.5	UJ	HHL	UG/KG
					METHYL ACETATE	2.7	U	2.7	UJ	HHL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	11	U	11	UJ	HHL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	11	U	11	UJ	HHL	UG/KG
					METHYLCYCLOHEXANE	2.3	U	2.3	UJ	HHL	UG/KG
					METHYLENE CHLORIDE	390	E	390	UJ	HHL, TBG, CRR	UG/KG
					NAPHTHALENE	2.3	U	2.3	UJ	HHL	UG/KG
					N-BUTYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					N-PROPYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	2.3	U	2.3	UJ	HHL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	2.3	U	2.3	UJ	HHL	UG/KG

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-3	LORNG_SB16011_0-1_06172022_K	SEC-BUTYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					STYRENE	2.3	U	2.3	UJ	HHL	UG/KG
					T-BUTYLBENZENE	2.3	U	2.3	UJ	HHL	UG/KG
					TERT-BUTYL METHYL ETHER	2.3	U	2.3	UJ	HHL	UG/KG
					TETRACHLOROETHYLENE(PCE)	2.3	U	2.3	UJ	HHL	UG/KG
					TOLUENE	2.3	U	2.3	UJ	HHL	UG/KG
					TRANS-1,2-DICHLOROETHENE	2.3	U	2.3	UJ	HHL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	2.3	U	2.3	UJ	HHL	UG/KG
					TRICHLOROETHYLENE (TCE)	2.3	U	2.3	UJ	HHL	UG/KG
					TRICHLOROFLUOROMETHANE	4.5	U	4.5	UJ	HHL	UG/KG
					VINYL ACETATE	2.3	U	2.3	UJ	HHL	UG/KG
					VINYL CHLORIDE	4.5	U	4.5	UJ	HHL	UG/KG
			SP3101-4	LORNG_SB16011_8-10_06172022_K	1,1,1,2-TETRACHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,1-TRICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2,2-TETRACHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1,2-TRICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROETHENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,1-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG

Prepared by:AKN
Date:12/14/22
Checked by: ALJ
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Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101	SW8260C	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	1,2,3-TRICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,3-TRICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,4-TRICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2,4-TRIMETHYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DIBROMO-3-CHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DICHLOROETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,2-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,3,5-TRIMETHYLBENZENE (MESITYLENE)	1.9	U	1.9	UJ	HHL	UG/KG
					1,3-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					1,3-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					1,4-DICHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					2,2-DICHLOROPROPANE	1.9	U	1.9	UJ	HHL	UG/KG
					2-CHLOROTOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
					2-HEXANONE	9.7	U	9.7	UJ	HHL	UG/KG
					4-CHLOROTOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
					ACETONE	9.7	U	9.7	UJ	HHL	UG/KG
					BENZENE	1.9	U	1.9	UJ	HHL	UG/KG

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					BROMOBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOCHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMODICHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOFORM	1.9	U	1.9	UJ	HHL	UG/KG
					BROMOMETHANE	3.9	U	3.9	UJ	HHL	UG/KG
					CARBON DISULFIDE	1.9	U	1.9	UJ	HHL	UG/KG
					CARBON TETRACHLORIDE	1.9	U	1.9	UJ	HHL	UG/KG
					CHLOROBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					CHLOROETHANE	3.9	U	3.9	UJ	HHL	UG/KG
					CHLOROFORM	0.74	J	1.9	UJ	HHL, LBM, TBL	UG/KG
					CHLOROMETHANE	3.9	U	3.9	UJ	HHL	UG/KG
					CIS-1,2-DICHLOROETHYLENE	1.9	U	1.9	UJ	HHL	UG/KG
					CIS-1,3-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG
					CYCLOHEXANE	1.9	U	1.9	UJ	HHL	UG/KG
					DIBROMOCHLOROMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					DIBROMOMETHANE	1.9	U	1.9	UJ	HHL	UG/KG
					DICHLORODIFLUOROMETHANE	3.9	U	3.9	UJ	HHL	UG/KG
					ETHYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
SP3101	SW8260C	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	HEXACHLOROBUTADIENE	1.9	U	1.9	UJ	HHL	UG/KG
					IODOMETHANE (METHYL IODIDE)	1.9	U	1.9	UJ	HHL	UG/KG

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Table 3 - Summary of Data Validation Actions

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Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					ISOPROPYLBENZENE (CUMENE)	1.9	U	1.9	UJ	HHL	UG/KG
					M,P-XYLENE (SUM OF ISOMERS)	3.9	U	3.9	UJ	HHL	UG/KG
					METHYL ACETATE	2.3	U	2.3	UJ	HHL	UG/KG
					METHYL ETHYL KETONE (2-BUTANONE)	9.7	U	9.7	UJ	HHL	UG/KG
					METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	9.7	U	9.7	UJ	HHL	UG/KG
					METHYLCYCLOHEXANE	1.9	U	1.9	UJ	HHL	UG/KG
					METHYLENE CHLORIDE	110		110	UJ	HHL, TBG	UG/KG
					NAPHTHALENE	1.9	U	1.9	UJ	HHL	UG/KG
					N-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					N-PROPYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					O-XYLENE (1,2-DIMETHYLBENZENE)	1.9	U	1.9	UJ	HHL	UG/KG
					P-CYMENE (P-ISOPROPYLTOLUENE)	1.9	U	1.9	UJ	HHL	UG/KG
					SEC-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					STYRENE	1.9	U	1.9	UJ	HHL	UG/KG
					T-BUTYLBENZENE	1.9	U	1.9	UJ	HHL	UG/KG
					TERT-BUTYL METHYL ETHER	1.9	U	1.9	UJ	HHL	UG/KG
					TETRACHLOROETHYLENE(PCE)	1.9	U	1.9	UJ	HHL	UG/KG
					TOLUENE	1.9	U	1.9	UJ	HHL	UG/KG
	SW8260C	T	SP3101-4	LORNG_SB16011_8-10_06172022_K	TRANS-1,2-DICHLOROETHENE	1.9	U	1.9	UJ	HHL	UG/KG
					TRANS-1,3-DICHLOROPROPENE	1.9	U	1.9	UJ	HHL	UG/KG

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Loring PFAS Remedial Investigation
Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3101					TRICHLOROETHYLENE (TCE)	1.9	U	1.9	UJ	HHL	UG/KG
					TRICHLOROFLUOROMETHANE	3.9	U	3.9	UJ	HHL	UG/KG
					VINYL ACETATE	1.9	U	1.9	UJ	HHL	UG/KG
					VINYL CHLORIDE	3.9	U	3.9	UJ	HHL	UG/KG
	SW8270D	T	SP3101-1	LORNG_SB16006_0-1_06172022_K	BIS(2-ETHYLHEXYL) PHTHALATE	180	JB	250	U	LBM	UG/KG
			SP3101-2	LORNG_SB16006_8-10_06172022_K	BIS(2-ETHYLHEXYL) PHTHALATE	110	JB	260	U	LBM	UG/KG
			SP3101-3	LORNG_SB16011_0-1_06172022_K	BIS(2-ETHYLHEXYL) PHTHALATE	170	JB	290	U	LBM	UG/KG
			SP3101-4	LORNG_SB16011_8-10_06172022_K	BIS(2-ETHYLHEXYL) PHTHALATE	180	JB	250	U	LBM	UG/KG
SP3119	SW6010C	T	SP3119-1	LORNG_SB21001_0-1_06182022_K	CALCIUM	3,000		3,000	J	FDD	MG/KG
					LEAD	22.5		22.5	J	FDD	MG/KG
			SP3119-2	LORNG_SB21001_0-1_06182022FD_K	CALCIUM	5,750		5,750	J	FDD	MG/KG
					LEAD	56.2		56.2	J	FDD	MG/KG
	SW8081B	T	SP3119-1	LORNG_SB21001_0-1_06182022_K	ENDRIN KETONE	60	J	60	J	CFD	UG/KG
					P,P'-DDT	57	J	57	J	CFD	UG/KG
			SP3119-2	LORNG_SB21001_0-1_06182022FD_K	ENDRIN KETONE	63	J	63	J	CFD	UG/KG
					P,P'-DDT	56	J	56	J	CFD	UG/KG
			SP3119-3	LORNG_SB21001_2-3_06182022_K	ALDRIN	0.96	U	0.96	UJ	SGL	UG/KG
					ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	0.96	U	0.96	UJ	SGL	UG/KG
					ALPHA ENDOSULFAN	0.96	U	0.96	UJ	SGL	UG/KG
					BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	0.96	U	0.96	UJ	SGL	UG/KG

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Round 1 Soil Sampling
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3119	SW8081B	T	SP3119-3	LORNG_SB21001_2-3_06182022_K	BETA ENDOSULFAN	1.9	U	1.9	UJ	SGL	UG/KG
					CIS-CHLORDANE	0.96	U	0.96	UJ	SGL	UG/KG
					DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	0.96	U	0.96	UJ	SGL	UG/KG
					DIELDRIN	1.9	U	1.9	UJ	SGL	UG/KG
					ENDOSULFAN SULFATE	1.9	U	1.9	UJ	SGL	UG/KG
					ENDRIN	1.9	U	1.9	UJ	SGL	UG/KG
					ENDRIN ALDEHYDE	1.9	U	1.9	UJ	SGL	UG/KG
					ENDRIN KETONE	1.9	U	1.9	UJ	SGL	UG/KG
					GAMMA BHC (LINDANE)	0.96	U	0.96	UJ	SGL	UG/KG
					GAMMA-CHLORDANE	0.96	U	0.96	UJ	SGL	UG/KG
					HEPTACHLOR	0.96	U	0.96	UJ	SGL	UG/KG
					HEPTACHLOR EPOXIDE	0.96	U	0.96	UJ	SGL	UG/KG
					METHOXYCHLOR	9.6	U	9.6	UJ	SGL	UG/KG
					P,P'-DDD	1.9	U	1.9	UJ	SGL	UG/KG
					P,P'-DDE	1.9	U	1.9	UJ	SGL	UG/KG
					P,P'-DDT	1.9	U	1.9	UJ	SGL	UG/KG
					TOXAPHENE	19	U	19	UJ	SGL	UG/KG
	SW8260C	T	SP3119-1	LORNG_SB21001_0-1_06182022_K	ACETONE	6.8	J	16	U	TBL	UG/KG
					CHLOROFORM	1.2	J	3.1	U	LBM, TBL	UG/KG

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
	SW8260C		SP3119-2	LORNG_SB21001_0-1_06182022FD_K	CHLOROFORM	1.5	J	3.8	U	LBM, TBL	UG/KG
			SP3119-3	LORNG_SB21001_2-3_06182022_K	CHLOROFORM	0.67	J	1.7	U	LBM, TBL	UG/KG

Table 3 - Summary of Data Validation Actions

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Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP3119	SW8270D	T	SP3119-1	LORNG_SB21001_0-1_06182022_K	4-CHLOROANILINE	310	UL	310	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,400	ULL	1,400	R	LCL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	130	JB	310	U	LBM	UG/KG
					HEXACHLOROCYCLOPENTADIENE	310	U	310	UJ	LCL	UG/KG
			SP3119-2	LORNG_SB21001_0-1_06182022FD_K	3,3'-DICHLOROBENZIDINE	310	UL	310	R	LCL	UG/KG
					3-NITROANILINE	760	UL	760	UJ	LCL, LCD	UG/KG
					4-CHLOROANILINE	310	ULL	310	R	LCL, LCD	UG/KG
					BENZIDINE	1,400	ULL	1,400	R	LCL	UG/KG
					BIS(2-ETHYLHEXYL) PHTHALATE	220	JB	310	U	LBM	UG/KG
					HEXACHLOROCYCLOPENTADIENE	310	ULL	310	UJ	LCL	UG/KG
			SP3119-3	LORNG_SB21001_2-3_06182022_K	4-CHLOROANILINE	260	UL	260	UJ	LCL, LCD	UG/KG
					BENZIDINE	1,200	ULL	1,200	R	LCL	UG/KG
					HEXACHLOROCYCLOPENTADIENE	260	U	260	UJ	LCL	UG/KG

Notes:

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

R = Sample reuslt is considered unusable for project objectives

CCL = Continuing calibration standard recovery less than lower control limit

CFD = Dual column RPD criteria exceeded

CRR = Calibration range exceeded

CVHL = Continuing calibration standard recovery greater than upper control limit

LDD = Laboratory duplicate RPD criteria exceeded

MSD = Matrix spike (MS)/MSD RPD criteria exceeded

MSH = MS recovery greater than upper control limit

MSL = MS recovery less than lower control limit

RIS = Extracted internal standard recovery outside control limits

SGH = Surrogate recovery greater than upper control limit

SGL = Surrogate recovery less than lower control limit

SVLL = Second source verification standard recovery less than lower control limit

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Checked by: ALJ
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Table 3 - Summary of Data Validation Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

FDD = Field duplicate RPD criteria exceeded
HHL = Sampling to analysis holding time exceeded
ISL = Internal standard response less than lower control limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCL = LCS recovery less than lower control limit
TBG = Trip blank concentration greater than reporting limit
TBL = Trip blank concentration less than reporting limit
NG/L = nanograms per liter
UG/L = micrograms per liter

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Date:12/14/22
Checked by: ALJ
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Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
170363	LORNG_SB21001_0-1_06182022_C	LORNG_SB21001_0-1_06182022FD_C	WetChem	TOTAL ORGANIC CARBON (MG/KG)	143,000	J	42,400	J	109	**FDD**
200-3792	LORNG_SB01016-8-10_06072022_E	LORNG_SB01016-8-10_06072022FDE	Perchlorate	PERCHLORATE (UG/KG)	0.46	U	0.48	U	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	83.2		81.1		3	
200-63883	LORNG_SB21001_0-1_06182022_E	LORNG_SB21001_0-1_06182022FD_E	Perchlorate	PERCHLORATE (UG/KG)	0.5	U	0.54	U	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	76.9		72.8		5	
FA95871	LORNG_SB07004_8-10_05202022	LORNG_SB07004_8-10_05202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	16.9		12.6		29	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	0.59	J	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	5.1		4.1		22	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	0.7	J	0.56	J	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	3.8	J	1.4	J	92	**FDD**
				Perfluorooctanoic acid (PFOA) (UG/KG)	2	J	1.5	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.4	J	1.2	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1	U	NC	
	LORNG_SB08003_0-1_05172022	LORNG_SB08003_0-1_05172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.3	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.3	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.3	UJ	1.2	UJ	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.3	U	1.2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
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Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95871	LORNG_SB08003_0-1_05172022	LORNG_SB08003_0-1_05172022FD	PFAS	Perfluorododecanoic acid (PFDoA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	2.2	J	2.4	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.3	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.3	U	1.2	U	NC	
FA95916	LORNG_SB07012_8-10_05202022	LORNG_SB07012_8-10_05202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	J	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95916	LORNG_SB10006_8-10_05222022	LORNG_SB10006_8-10_05222022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1	U	1.1	U	NC	
	LORNG_SB11002_8-10_05222022	LORNG_SB11002_8-10_05222022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95916	LORNG_SB11002_8-10_05222022	LORNG_SB11002_8-10_05222022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1	U	NC	
FA95934	LORNG_SB13002_0-1_05232022	LORNG_SB13002_0-1_05232022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	UJ	1.1	U	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.7	J	1.6	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB13014_0-1_05232022	LORNG_SB13014_0-1_05232022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95934	LORNG_SB13014_0-1_05232022	LORNG_SB13014_0-1_05232022FD	PFAS	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1	J	1.2	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
FA96109	LORNG_SB13019_8-10_06012022	LORNG_SB13019_8-10_06012022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96109	LORNG_SB13019_8-10_06012022	LORNG_SB13019_8-10_06012022FD	PFAS	Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1	U	1.1	U	NC	
FA96203	LORNG_SB12008_8-10_06022022	LORNG_SB12008_8-10_06022022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	2.3		1.6	J	36	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
FA96238	LORNG_SB05006_0-1_06042022	LORNG_SB05006_0-1_06042022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.3	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.3	U	NC	

Table 4 - Field Duplicate RPD Summary

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Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96238	LORNG_SB05006_0-1_06042022	LORNG_SB05006_0-1_06042022FD	PFAS	Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.6	J	1.2	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.4	J	1	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	32.7		23.1		34	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.3	U	NC	
	LORNG_SB18023_0-1_06052022	LORNG_SB18023_0-1_06052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96351	LORNG_SB01009_8-10_06072022	LORNG_SB01009_8-10_06072022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	0.97	J	1.3	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
	LORNG_SB01011_8-10_06062022	LORNG_SB01011_8-10_06062022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	0.67	J	0.7	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	0.8	J	0.63	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	0.81	J	0.9	J	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1	U	NC	

Table 4 - Field Duplicate RPD Summary

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Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96351	LORNG_SB01011_8-10_06062022	LORNG_SB01011_8-10_06062022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	16.4		14.2		14	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1	U	NC	
	LORNG_SB01016_8-10_06072022	LORNG_SB01016_8-10_06072022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	5.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.1	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
Soil Round 1 Sampling
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96616	LORNG_SB16012_0-1_06172022	LORNG_SB16012_0-1_06172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	J	1.3	J	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1	U	NC	
FA96627	LORNG_SB18011_8-10_06152022	LORNG_SB18011_8-10_06152022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	0.92	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	0.92	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	0.92	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	0.92	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	5.4	U	0.92	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	0.92	U	NC	

Table 4 - Field Duplicate RPD Summary

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Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96627	LORNG_SB18011_8-10_06152022	LORNG_SB18011_8-10_06152022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	0.92	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	0.92	U	NC	
FA96691	LORNG_SB20006_0-1_06182022	LORNG_SB20006_0-1_06182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	5.9		4.8		21	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.2	U	NC	

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Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA96691	LORNG_SB21001_0-1_06182022	LORNG_SB21001_0-1_06182022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.2	U	1.3	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.2	U	1.3	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.2	UJ	6.6	U	NC	RIS
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.2	UJ	1.3	U	NC	RIS
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	3.3		2.9		13	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.2	U	0.83	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.2	U	1.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.2	U	1.3	U	NC	
FA96726	LORNG_SB12005_8-10_06202022	LORNG_SB12005_8-10_06202022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (UG/KG)	1.1	U	1.1	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorobutanoic acid (PFBA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecane sulfonate (PFDS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorodecanoic acid (PFDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorohexanoic acid (PFHxA) (UG/KG)	1.1	U	1.1	U	NC	

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FA96726	LORNG_SB12005_8-10_06202022	LORNG_SB12005_8-10_06202022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorooctanoic acid (PFOA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoropentanoic acid (PFPeA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (UG/KG)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (UG/KG)	1.1	U	1.1	U	NC	
SP2721	LORNG_SB13018_8-10_06012022_K	LORNG_SB13018_8-10_06012022FDK	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1,1-TRICHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1,2-TRICHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1-DICHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,1-DICHLOROETHENE (UG/KG)	2.3	U	2	U	NC	
				1,1-DICHLOROPROPENE (UG/KG)	2.3	U	2	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/KG)	2.3	U	2	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/KG)	2.3	U	2	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/KG)	2.3	U	2	U	NC	
				1,2-DICHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				1,2-DICHLOROETHANE (UG/KG)	2.3	U	2	U	NC	
				1,2-DICHLOROPROPANE (UG/KG)	2.3	U	2	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/KG)	2.3	U	2	U	NC	
				1,3-DICHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				1,3-DICHLOROPROPANE (UG/KG)	2.3	U	2	U	NC	
				1,4-DICHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				2,2-DICHLOROPROPANE (UG/KG)	2.3	U	2	U	NC	
				2-CHLOROTOLUENE (UG/KG)	2.3	U	2	U	NC	
				2-HEXANONE (UG/KG)	12	U	10	U	NC	
				4-CHLOROTOLUENE (UG/KG)	2.3	U	2	U	NC	
				ACETONE (UG/KG)	12	U	10	U	NC	
				BENZENE (UG/KG)	2.3	U	2	U	NC	
				BROMOBENZENE (UG/KG)	2.3	U	2	U	NC	
				BROMOCHLOROMETHANE (UG/KG)	2.3	U	2	U	NC	
				BROMODICHLOROMETHANE (UG/KG)	2.3	U	2	U	NC	

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SP2721	LORNG_SB13018_8-10_06012022_K	LORNG_SB13018_8-10_06012022FDK	VOCs	BROMOFORM (UG/KG)	2.3	U	2	U	NC	
				BROMOMETHANE (UG/KG)	4.7	U	4.1	U	NC	
				CARBON DISULFIDE (UG/KG)	2.3	U	2	U	NC	
				CARBON TETRACHLORIDE (UG/KG)	2.3	U	2	U	NC	
				CHLOROBENZENE (UG/KG)	2.3	U	2	U	NC	
				CHLOROETHANE (UG/KG)	4.7	U	4.1	U	NC	
				CHLOROFORM (UG/KG)	2.3	U	2	U	NC	LBM, TBL
				CHLOROMETHANE (UG/KG)	4.7	U	4.1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/KG)	2.3	U	2	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/KG)	2.3	U	2	U	NC	
				CYCLOHEXANE (UG/KG)	2.3	U	2	U	NC	
				DIBROMOCHLOROMETHANE (UG/KG)	2.3	U	2	U	NC	
				DIBROMOMETHANE (UG/KG)	2.3	U	2	U	NC	
				DICHLORODIFLUOROMETHANE (UG/KG)	4.7	U	4.1	U	NC	
				ETHYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				HEXACHLOROBUTADIENE (UG/KG)	2.3	U	2	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/KG)	2.3	U	2	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/KG)	2.3	U	2	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/KG)	4.7	U	4.1	U	NC	
				METHYL ACETATE (UG/KG)	2.8	U	2.5	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/KG)	12	U	10	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/KG)	12	U	10	U	NC	
				METHYLCYCLOHEXANE (UG/KG)	2.3	U	2	U	NC	
				METHYLENE CHLORIDE (UG/KG)	12	U	10	U	NC	
				NAPHTHALENE (UG/KG)	2.3	U	2	U	NC	
				N-BUTYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				N-PROPYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/KG)	2.3	U	2	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/KG)	2.3	U	2	U	NC	
				SEC-BUTYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				STYRENE (UG/KG)	2.3	U	2	U	NC	
				T-BUTYLBENZENE (UG/KG)	2.3	U	2	U	NC	
				TERT-BUTYL METHYL ETHER (UG/KG)	2.3	U	2	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/KG)	2.3	U	2	U	NC	
				TOLUENE (UG/KG)	2.3	U	1.2	J	NC	
				TRANS-1,2-DICHLOROETHENE (UG/KG)	2.3	U	2	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/KG)	2.3	U	2	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/KG)	2.3	U	2	U	NC	
				TRICHLOROFLUOROMETHANE (UG/KG)	4.7	U	4.1	U	NC	
				VINYL ACETATE (UG/KG)	2.3	U	2	U	NC	
SP2721	LORNG_SB13018_8-10_06012022_K	LORNG_SB13018_8-10_06012022FDK	VOCs	VINYL CHLORIDE (UG/KG)	4.7	U	4.1	U	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	90		90		0	
				ALUMINUM (MG/KG)	23,700		21,700		9	

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SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	Metals	ANTIMONY (MG/KG)	1	U	0.78	U	NC	
				ARSENIC (MG/KG)	5.62		6.48		14	
				BARIUM (MG/KG)	50		49.7		1	
				BERYLLIUM (MG/KG)	0.683		0.624		9	
				CADMIUM (MG/KG)	0.31	U	0.47	U	NC	
				CALCIUM (MG/KG)	583		583		0	
				CHROMIUM, TOTAL (MG/KG)	39.2		43.6		11	
				COBALT (MG/KG)	13.6		13		5	
				COPPER (MG/KG)	22.2		17.8		22	
				IRON (MG/KG)	38,500		35,100		9	
				LEAD (MG/KG)	12.9		14.4		11	
				MAGNESIUM (MG/KG)	9,950		9,150		8	
				MANGANESE (MG/KG)	510		530		4	
				MERCURY (MG/KG)	0.045		0.0718		46	
				NICKEL (MG/KG)	48.9		55.5		13	
				POTASSIUM (MG/KG)	1,440		1,360		6	
				SELENIUM (MG/KG)	1.5	U	1.1	U	NC	
				SILVER (MG/KG)	0.68	J	0.521	J	NC	
				SODIUM (MG/KG)	39.7	J	37.1	J	NC	
				THALLIUM (MG/KG)	0.55	J	0.46	J	NC	
				VANADIUM (MG/KG)	29.4		29.5		0	
				ZINC (MG/KG)	77.7		69.4		11	
			PAHs	PCB, TOTAL (UG/KG)	90	U	91	U	NC	
				PCB-1016 (AROCLOR 1016) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1221 (AROCLOR 1221) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1232 (AROCLOR 1232) (UG/KG)	12	U	12	U	NC	
				PCB-1242 (AROCLOR 1242) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1248 (AROCLOR 1248) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1254 (AROCLOR 1254) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1260 (AROCLOR 1260) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1262 (AROCLOR 1262) (UG/KG)	9.8	U	9.9	U	NC	
				PCB-1268 (AROCLOR 1268) (UG/KG)	9.8	U	9.9	U	NC	
				ALDRIN (UG/KG)	0.98	U	0.99	U	NC	
				ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.99	U	NC	
				ALPHA ENDOSULFAN (UG/KG)	0.98	U	0.99	U	NC	
				BETA BHC (BETA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.99	U	NC	
				BETA ENDOSULFAN (UG/KG)	1.9	U	1.9	U	NC	

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SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	PAHs	CIS-CHLORDANE (UG/KG)	0.98	U	0.99	U	NC	
				DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) (UG/KG)	0.98	U	0.99	U	NC	
				DIELDRIN (UG/KG)	1.9	U	1.9	U	NC	
				ENDOSULFAN SULFATE (UG/KG)	1.9	U	1.9	U	NC	
			PCBs	ENDRIN (UG/KG)	1.9	U	1.9	U	NC	
				ENDRIN ALDEHYDE (UG/KG)	1.9	U	1.9	U	NC	
				ENDRIN KETONE (UG/KG)	1.9	U	1.9	U	NC	
				GAMMA BHC (LINDANE) (UG/KG)	0.98	U	0.99	U	NC	
				GAMMA-CHLORDANE (UG/KG)	0.98	U	0.99	U	NC	
				HEPTACHLOR (UG/KG)	0.98	U	0.99	U	NC	
				HEPTACHLOR EPOXIDE (UG/KG)	0.98	U	0.99	U	NC	
				METHOXYCHLOR (UG/KG)	9.8	U	9.9	U	NC	
				P,P'-DDD (UG/KG)	0.68	J	0.83	J	NC	
				P,P'-DDE (UG/KG)	1.9	U	1.9	U	NC	
			Pesticides	P,P'-DDT (UG/KG)	1.9	U	1.9	U	NC	
				TOXAPHENE (UG/KG)	19	U	19	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	280	U	280	UJ	NC	
				1,2-DICHLOROBENZENE (UG/KG)	280	U	280	UJ	NC	
				1,2-DIPHENYLHYDRAZINE (UG/KG)	570	U	550	UJ	NC	
				1,3-DICHLOROBENZENE (UG/KG)	280	U	280	UJ	NC	
				1,4-DICHLOROBENZENE (UG/KG)	280	U	280	UJ	NC	
				1-METHYLNAPHTHALENE (UG/KG)	280	U	280	UJ	NC	
				2,2'-OXYBIS(1-CHLORO)PROPANE (UG/KG)	280	U	280	UJ	NC	
				2,3,4,6-TETRACHLOROPHENOL (UG/KG)	280	U	280	UJ	NC	
				2,4,5-TRICHLOROPHENOL (UG/KG)	700	U	680	UJ	NC	
				2,4,6-TRICHLOROPHENOL (UG/KG)	280	U	280	UJ	NC	
				2,4-DICHLOROPHENOL (UG/KG)	280	U	280	UJ	NC	
				2,4-DIMETHYLPHENOL (UG/KG)	280	U	280	UJ	NC	
				2,4-DINITROPHENOL (UG/KG)	700	U	680	UJ	NC	
				2,4-DINITROTOLUENE (UG/KG)	280	U	280	UJ	NC	
				2,6-DINITROTOLUENE (UG/KG)	280	U	280	UJ	NC	
				2-CHLORONAPHTHALENE (UG/KG)	280	U	280	UJ	NC	
				2-CHLOROPHENOL (UG/KG)	280	U	280	UJ	NC	
				2-METHYLPHENOL (O-CRESOL) (UG/KG)	280	U	280	UJ	NC	
				2-NITROANILINE (UG/KG)	700	U	680	UJ	NC	
			SVOCs	2-NITROPHENOL (UG/KG)	280	U	280	UJ	NC	
				3,3'-DICHLOROBENZIDINE (UG/KG)	280	U	280	UJ	NC	
				3-NITROANILINE (UG/KG)	700	U	680	UJ	NC	
				4,6-DINITRO-2-METHYLPHENOL (UG/KG)	700	U	680	UJ	NC	
				4-BROMOPHENYL PHENYL ETHER (UG/KG)	280	U	280	UJ	NC	

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SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	SVOCs	4-CHLORO-3-METHYLPHENOL (UG/KG)	280	U	280	UJ	NC	
				4-CHLOROANILINE (UG/KG)	280	U	280	UJ	NC	
				4-CHLOROPHENYL PHENYL ETHER (UG/KG)	280	U	280	UJ	NC	
				4-NITROANILINE (UG/KG)	700	U	680	UJ	NC	
				4-NITROPHENOL (UG/KG)	700	U	680	UJ	NC	
				BENZALDEHYDE (UG/KG)	280	U	280	UJ	NC	
				BENZIDINE (UG/KG)	1,300	R	1,200	R	NC	LCL
				BENZOIC ACID (UG/KG)	700	U	680	UJ	NC	
				BENZYL ALCOHOL (UG/KG)	570	U	550	UJ	NC	
				BENZYL BUTYL PHTHALATE (UG/KG)	280	U	280	UJ	NC	
				BIPHENYL (DIPHENYL) (UG/KG)	280	U	280	UJ	NC	
				BIS(2-CHLOROETHOXY) METHANE (UG/KG)	280	U	280	UJ	NC	
				BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) (UG/KG)	280	U	280	UJ	NC	
				BIS(2-ETHYLHEXYL) PHTHALATE (UG/KG)	280	U	280	UJ	NC	
				CARBAZOLE (UG/KG)	280	U	280	UJ	NC	
				CRESOLS, M & P (UG/KG)	280	U	280	UJ	NC	
				DIBENZOFURAN (UG/KG)	280	U	280	UJ	NC	
				DIETHYL PHTHALATE (UG/KG)	280	U	280	UJ	NC	
				DIMETHYL PHTHALATE (UG/KG)	280	U	280	UJ	NC	
				DI-N-BUTYL PHTHALATE (UG/KG)	280	U	280	UJ	NC	
				DI-N-OCTYLPHTHALATE (UG/KG)	280	U	280	UJ	NC	
				HEXACHLOROBENZENE (UG/KG)	280	U	280	UJ	NC	
				HEXACHLOROBUTADIENE (UG/KG)	280	U	280	UJ	NC	
				HEXACHLOROCYCLOPENTADIENE (UG/KG)	280	U	280	UJ	NC	
				HEXACHLOROETHANE (UG/KG)	280	U	280	UJ	NC	
				ISOPHORONE (UG/KG)	280	U	280	UJ	NC	
				NITROBENZENE (UG/KG)	280	U	280	UJ	NC	
				N-NITROSODIMETHYLAMINE (UG/KG)	280	U	280	UJ	NC	
				N-NITROSODI-N-PROPYLAMINE (UG/KG)	280	U	280	UJ	NC	
				N-NITROSODIPHENYLAMINE (UG/KG)	280	U	280	UJ	NC	
				PHENOL (UG/KG)	280	U	280	UJ	NC	
				1,4-DIOXANE (P-DIOXANE) (UG/KG)	57	UJ	55	UJ	NC	LCL, MSL
				2-METHYLNAPHTHALENE (UG/KG)	11	U	11	U	NC	
				ACENAPHTHENE (UG/KG)	11	U	11	U	NC	
				ACENAPHTHYLENE (UG/KG)	11	U	11	U	NC	
				ANTHRACENE (UG/KG)	11	UJ	11	UJ	NC	MSL
				BENZO(A)ANTHRACENE (UG/KG)	11	U	11	U	NC	
				BENZO(A)PYRENE (UG/KG)	11	UJ	11	UJ	NC	MSL
				BENZO(B)FLUORANTHENE (UG/KG)	11	U	11	U	NC	
				BENZO(G,H,I)PERYLENE (UG/KG)	11	U	11	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	SVOCs	BENZO(K)FLUORANTHENE (UG/KG)	11	UJ	11	UJ	NC	MSL
				CHRYSENE (UG/KG)	11	UJ	11	UJ	NC	MSL
				DIBENZ(A,H)ANTHRACENE (UG/KG)	11	U	11	U	NC	
				FLUORANTHENE (UG/KG)	11	U	11	U	NC	
				FLUORENE (UG/KG)	11	U	11	U	NC	
				INDENO(1,2,3-C,D)PYRENE (UG/KG)	11	U	11	U	NC	
				NAPHTHALENE (UG/KG)	11	U	11	U	NC	
				PENTACHLOROPHENOL (UG/KG)	57	U	55	U	NC	
				PHENANTHRENE (UG/KG)	11	U	11	U	NC	
				PYRENE (UG/KG)	11	U	11	U	NC	
			VOCs	1,1,1,2-TETRACHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,1,1-TRICHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,1,2,2-TETRACHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/KG)	2.3	U	3.3	U	NC	
				1,1,2-TRICHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,1-DICHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,1-DICHLOROETHENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,1-DICHLOROPROPENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2,3-TRICHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,2,3-TRICHLOROPROPANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2,4-TRICHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,2,4-TRIMETHYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2-DIBROMO-3-CHLOROPROPANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2-DICHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,2-DICHLOROETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,2-DICHLOROPROPANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,3-DICHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				1,3-DICHLOROPROPANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				1,4-DICHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				2,2-DICHLOROPROPANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				2-CHLOROTOLUENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				2-HEXANONE (UG/KG)	11	UJ	16	UJ	NC	MSL
				4-CHLOROTOLUENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				ACETONE (UG/KG)	34	J	63	J	60	FDD
				BENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				BROMOBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				BROMOCHLOROMETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				BROMODICHLOROMETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL

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SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	VOCs	BROMOFORM (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				BROMOMETHANE (UG/KG)	4.5	U	6.5	U	NC	
				CARBON DISULFIDE (UG/KG)	2.3	U	3.3	U	NC	
				CARBON TETRACHLORIDE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				CHLOROBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				CHLOROETHANE (UG/KG)	4.5	U	6.5	U	NC	
				CHLOROFORM (UG/KG)	2.3	UJ	3.3	UJ	NC	LBM, TBL, MSL
				CHLOROMETHANE (UG/KG)	4.5	U	6.5	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				CIS-1,3-DICHLOROPROPENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				CYCLOHEXANE (UG/KG)	2.3	U	3.3	U	NC	
				DIBROMOCHLOROMETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				DIBROMOMETHANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				DICHLORODIFLUOROMETHANE (UG/KG)	4.5	U	6.5	U	NC	
				ETHYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				HEXACHLOROBUTADIENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				IODOMETHANE (METHYL IODIDE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				ISOPROPYLBENZENE (CUMENE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				M,P-XYLENE (SUM OF ISOMERS) (UG/KG)	4.5	UJ	6.5	UJ	NC	MSL
				METHYL ACETATE (UG/KG)	2.7	U	3.9	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/KG)	11	U	9.2	J	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/KG)	11	UJ	16	UJ	NC	MSL
				METHYLCYCLOHEXANE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				METHYLENE CHLORIDE (UG/KG)	11	UJ	16	UJ	NC	MSL
				NAPHTHALENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				N-BUTYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				N-PROPYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				SEC-BUTYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				STYRENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL, MSD
				T-BUTYLBENZENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TERT-BUTYL METHYL ETHER (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TETRACHLOROETHYLENE(PCE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TOLUENE (UG/KG)	2.5	J	3.3	UJ	NC	MSL
				TRANS-1,2-DICHLOROETHENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TRANS-1,3-DICHLOROPROPENE (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TRICHLOROETHYLENE (TCE) (UG/KG)	2.3	UJ	3.3	UJ	NC	MSL
				TRICHLOROFLUOROMETHANE (UG/KG)	4.5	U	6.5	U	NC	
SP2868	LORNG_SB01016-8-10_06072022_K	LORNG_SB01016-8-10_06072022FDK	VOCs	VINYL ACETATE (UG/KG)	2.3	R	3.3	R	NC	MSL
				VINYL CHLORIDE (UG/KG)	4.5	U	6.5	U	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	84		85		1	

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SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	Metals	ALUMINUM (MG/KG)	18,500		21,000		13	
				ANTIMONY (MG/KG)	1	U	1.1	U	NC	
				ARSENIC (MG/KG)	6.99		6.9		1	
				BARIUM (MG/KG)	52.3		59.6		13	
				BERYLLIUM (MG/KG)	0.67		0.841		23	
				CADMIUM (MG/KG)	0.458	J	0.665	J	NC	
				CALCIUM (MG/KG)	3,000	J	5,750	J	63	FDD
				CHROMIUM, TOTAL (MG/KG)	35		49		33	
				COBALT (MG/KG)	13.9		16.1		15	
				COPPER (MG/KG)	25.9		24.8		4	
				IRON (MG/KG)	31,000		35,100		12	
				LEAD (MG/KG)	22.5	J	56.2	J	86	FDD
				MAGNESIUM (MG/KG)	8,760		11,600		28	
				MANGANESE (MG/KG)	652		764		16	
				MERCURY (MG/KG)	0.233		0.304		26	
				NICKEL (MG/KG)	44.1		59.5		30	
				POTASSIUM (MG/KG)	1120		1460		26	
				SELENIUM (MG/KG)	0.36	J	0.66	J	NC	
				SILVER (MG/KG)	0.44	J	0.734	J	NC	
				SODIUM (MG/KG)	44.8	J	66.9	J	NC	
				THALLIUM (MG/KG)	0.43	J	0.4	J	NC	
				VANADIUM (MG/KG)	25.2		34.4		31	
				ZINC (MG/KG)	78.5		95.3		19	
			PAHs	PCB, TOTAL (UG/KG)	910		810		12	
				PCB-1016 (AROCLOR 1016) (UG/KG)	11	U	11	U	NC	
				PCB-1221 (AROCLOR 1221) (UG/KG)	11	U	11	U	NC	
				PCB-1232 (AROCLOR 1232) (UG/KG)	13	U	13	U	NC	
				PCB-1242 (AROCLOR 1242) (UG/KG)	11	U	11	U	NC	
				PCB-1248 (AROCLOR 1248) (UG/KG)	11	U	11	U	NC	
				PCB-1254 (AROCLOR 1254) (UG/KG)	11	U	11	U	NC	
				PCB-1260 (AROCLOR 1260) (UG/KG)	910		810		12	
				PCB-1262 (AROCLOR 1262) (UG/KG)	11	U	11	U	NC	
				PCB-1268 (AROCLOR 1268) (UG/KG)	11	U	11	U	NC	
				ALDRIN (UG/KG)	1.1	U	1.1	U	NC	
				ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) (UG/KG)	1.1	U	1.1	U	NC	
				ALPHA ENDOSULFAN (UG/KG)	1.1	U	1.1	U	NC	
				BETA BHC (BETA HEXACHLOROCYCLOHEXANE) (UG/KG)	1.1	U	1.1	U	NC	

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SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	PAHs	BETA ENDOSULFAN (UG/KG)	2.1	U	2.2	U	NC	
				CIS-CHLORDANE (UG/KG)	1.1	U	1.1	U	NC	
				DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) (UG/KG)	1.1	U	1.1	U	NC	
				DIELDRIN (UG/KG)	2.1	U	2.2	U	NC	
				ENDOSULFAN SULFATE (UG/KG)	2.1	U	2.2	U	NC	
			PCBs	ENDRIN (UG/KG)	2.1	U	2.2	U	NC	
				ENDRIN ALDEHYDE (UG/KG)	2.1	U	2.2	U	NC	
				ENDRIN KETONE (UG/KG)	60	J	63	J	5	CFD
				GAMMA BHC (LINDANE) (UG/KG)	1.1	U	1.1	U	NC	
				GAMMA-CHLORDANE (UG/KG)	1.1	U	1.1	U	NC	
				HEPTACHLOR (UG/KG)	1.1	U	1.1	U	NC	
				HEPTACHLOR EPOXIDE (UG/KG)	1.1	U	1.1	U	NC	
				METHOXYCHLOR (UG/KG)	11	U	11	U	NC	
				P,P'-DDD (UG/KG)	2.1	U	2.2	U	NC	
				P,P'-DDE (UG/KG)	5.5		5.2		6	
			Pesticides	P,P'-DDT (UG/KG)	57	J	56	J	2	CFD
				TOXAPHENE (UG/KG)	21	U	22	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	310	U	310	U	NC	
				1,2-DICHLOROBENZENE (UG/KG)	310	U	310	U	NC	
				1,2-DIPHENYLHYDRAZINE (UG/KG)	620	U	610	U	NC	
				1,3-DICHLOROBENZENE (UG/KG)	310	U	310	U	NC	
				1,4-DICHLOROBENZENE (UG/KG)	310	U	310	U	NC	
				1-METHYLNAPHTHALENE (UG/KG)	310	U	310	U	NC	
				2,2'-OXYBIS(1-CHLORO)PROPANE (UG/KG)	310	U	310	U	NC	
				2,3,4,6-TETRACHLOROPHENOL (UG/KG)	310	U	310	U	NC	
				2,4,5-TRICHLOROPHENOL (UG/KG)	770	U	760	U	NC	
				2,4,6-TRICHLOROPHENOL (UG/KG)	310	U	310	U	NC	
				2,4-DICHLOROPHENOL (UG/KG)	310	U	310	U	NC	
				2,4-DIMETHYLPHENOL (UG/KG)	310	U	310	U	NC	
				2,4-DINITROPHENOL (UG/KG)	770	U	760	U	NC	
				2,4-DINITROTOLUENE (UG/KG)	310	U	310	U	NC	
				2,6-DINITROTOLUENE (UG/KG)	310	U	310	U	NC	
				2-CHLORONAPHTHALENE (UG/KG)	310	U	310	U	NC	
				2-CHLOROPHENOL (UG/KG)	310	U	310	U	NC	
				2-METHYLPHENOL (O-CRESOL) (UG/KG)	310	U	310	U	NC	
				2-NITROANILINE (UG/KG)	770	U	760	U	NC	
			SVOCs	2-NITROPHENOL (UG/KG)	310	U	310	U	NC	
				3,3'-DICHLOROBENZIDINE (UG/KG)	310	U	310	R	NC	
				3-NITROANILINE (UG/KG)	770	U	760	UJ	NC	
				4,6-DINITRO-2-METHYLPHENOL (UG/KG)	770	U	760	U	NC	

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SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	SVOCs	4-BROMOPHENYL PHENYL ETHER (UG/KG)	310	U	310	U	NC	
				4-CHLORO-3-METHYLPHENOL (UG/KG)	310	U	310	U	NC	
				4-CHLOROANILINE (UG/KG)	310	UJ	310	R	NC	LCL, LCD
				4-CHLOROPHENYL PHENYL ETHER (UG/KG)	310	U	310	U	NC	
				4-NITROANILINE (UG/KG)	770	U	760	U	NC	
				4-NITROPHENOL (UG/KG)	770	U	760	U	NC	
				BENZALDEHYDE (UG/KG)	310	U	310	U	NC	
				BENZIDINE (UG/KG)	1,400	R	1,400	R	NC	LCL
				BENZOIC ACID (UG/KG)	770	U	760	U	NC	
				BENZYL ALCOHOL (UG/KG)	620	U	610	U	NC	
				BENZYL BUTYL PHTHALATE (UG/KG)	310	U	310	U	NC	
				BIPHENYL (DIPHENYL) (UG/KG)	310	U	310	U	NC	
				BIS(2-CHLOROETHOXY) METHANE (UG/KG)	310	U	310	U	NC	
				BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) (UG/KG)	310	U	310	U	NC	
				BIS(2-ETHYLHEXYL) PHTHALATE (UG/KG)	310	U	310	U	NC	LBM
				CARBAZOLE (UG/KG)	310	U	310	U	NC	
				CRESOLS, M & P (UG/KG)	310	U	310	U	NC	
				DIBENZOFURAN (UG/KG)	310	U	310	U	NC	
				DIETHYL PHTHALATE (UG/KG)	310	U	310	U	NC	
				DIMETHYL PHTHALATE (UG/KG)	310	U	310	U	NC	
				DI-N-BUTYL PHTHALATE (UG/KG)	310	U	310	U	NC	
				DI-N-OCTYLPHTHALATE (UG/KG)	310	U	310	U	NC	
				HEXACHLOROBENZENE (UG/KG)	310	U	310	U	NC	
				HEXACHLOROBUTADIENE (UG/KG)	310	U	310	U	NC	
				HEXACHLOROCYCLOPENTADIENE (UG/KG)	310	UJ	310	UJ	NC	LCL
				HEXACHLOROETHANE (UG/KG)	310	U	310	U	NC	
				ISOPHORONE (UG/KG)	310	U	310	U	NC	
				NITROBENZENE (UG/KG)	310	U	310	U	NC	
				N-NITROSODIMETHYLAMINE (UG/KG)	310	U	310	U	NC	
				N-NITROSODI-N-PROPYLAMINE (UG/KG)	310	U	310	U	NC	
				N-NITROSODIPHENYLAMINE (UG/KG)	310	U	310	U	NC	
				PHENOL (UG/KG)	310	U	310	U	NC	
				1,4-DIOXANE (P-DIOXANE) (UG/KG)	63	U	65	U	NC	
				2-METHYLNAPHTHALENE (UG/KG)	3.2	J	13	U	NC	
				ACENAPHTHENE (UG/KG)	14	J	11	J	NC	
				ACENAPHTHYLENE (UG/KG)	12	U	13	U	NC	
				ANTHRACENE (UG/KG)	23	J	32		33	
				BENZO(A)ANTHRACENE (UG/KG)	130		200		42	
				BENZO(A)PYRENE (UG/KG)	88		130		39	
				BENZO(B)FLUORANTHENE (UG/KG)	160		210		27	

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SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	SVOCs	BENZO(G,H,I)PERYLENE (UG/KG)	61		85		33	
				BENZO(K)FLUORANTHENE (UG/KG)	56		68		19	
				CHRYSENE (UG/KG)	110		160		37	
				DIBENZ(A,H)ANTHRACENE (UG/KG)	14	J	24	J	NC	
				FLUORANTHENE (UG/KG)	210		320		42	
				FLUORENE (UG/KG)	11	J	9.9	J	NC	
				INDENO(1,2,3-C,D)PYRENE (UG/KG)	130		200		42	
				NAPHTHALENE (UG/KG)	12	U	13	U	NC	
				PENTACHLOROPHENOL (UG/KG)	63	U	65	U	NC	
				PHENANTHRENE (UG/KG)	110		140		24	
				PYRENE (UG/KG)	180		260		36	
			VOCs	1,1,1,2-TETRACHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1,1-TRICHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1,2-TRICHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1-DICHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,1-DICHLOROETHENE (UG/KG)	3.1	U	3.8	U	NC	
				1,1-DICHLOROPROPENE (UG/KG)	3.1	U	3.8	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/KG)	3.1	U	3.8	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/KG)	3.1	U	3.8	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/KG)	3.1	U	3.8	U	NC	
				1,2-DICHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				1,2-DICHLOROETHANE (UG/KG)	3.1	U	3.8	U	NC	
				1,2-DICHLOROPROPANE (UG/KG)	3.1	U	3.8	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/KG)	3.1	U	3.8	U	NC	
				1,3-DICHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				1,3-DICHLOROPROPANE (UG/KG)	3.1	U	3.8	U	NC	
				1,4-DICHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				2,2-DICHLOROPROPANE (UG/KG)	3.1	U	3.8	U	NC	
				2-CHLOROTOLUENE (UG/KG)	3.1	U	3.8	U	NC	
				2-HEXANONE (UG/KG)	16	U	19	U	NC	
				4-CHLOROTOLUENE (UG/KG)	3.1	U	3.8	U	NC	
				ACETONE (UG/KG)	16	U	19	U	NC	TBL
				BENZENE (UG/KG)	3.1	U	3.8	U	NC	
				BROMOBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				BROMOCHLOROMETHANE (UG/KG)	3.1	U	3.8	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	VOCs	BROMODICHLOROMETHANE (UG/KG)	3.1	U	3.8	U	NC	
				BROMOFORM (UG/KG)	3.1	U	3.8	U	NC	
				BROMOMETHANE (UG/KG)	6.2	U	7.5	U	NC	
				CARBON DISULFIDE (UG/KG)	3.1	U	3.8	U	NC	
				CARBON TETRACHLORIDE (UG/KG)	3.1	U	3.8	U	NC	
				CHLOROBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				CHLOROETHANE (UG/KG)	6.2	U	7.5	U	NC	
				CHLOROFORM (UG/KG)	3.1	U	3.8	U	NC	LBM, TBL
				CHLOROMETHANE (UG/KG)	6.2	U	7.5	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/KG)	3.1	U	3.8	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/KG)	3.1	U	3.8	U	NC	
				CYCLOHEXANE (UG/KG)	3.1	U	3.8	U	NC	
				DIBROMOCHLOROMETHANE (UG/KG)	3.1	U	3.8	U	NC	
				DIBROMOMETHANE (UG/KG)	3.1	U	3.8	U	NC	
				DICHLORODIFLUOROMETHANE (UG/KG)	6.2	U	7.5	U	NC	
				ETHYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				HEXACHLOROBUTADIENE (UG/KG)	3.1	U	3.8	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/KG)	3.1	U	3.8	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/KG)	3.1	U	3.8	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/KG)	6.2	U	7.5	U	NC	
				METHYL ACETATE (UG/KG)	3.8	U	4.5	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/KG)	16	U	19	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/KG)	16	U	19	U	NC	
				METHYLCYCLOHEXANE (UG/KG)	3.1	U	3.8	U	NC	
				METHYLENE CHLORIDE (UG/KG)	16	U	19	U	NC	
				NAPHTHALENE (UG/KG)	3.1	U	3.8	U	NC	
				N-BUTYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				N-PROPYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/KG)	3.1	U	3.8	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/KG)	3.1	U	3.8	U	NC	
				SEC-BUTYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				STYRENE (UG/KG)	3.1	U	3.8	U	NC	
				T-BUTYLBENZENE (UG/KG)	3.1	U	3.8	U	NC	
				TERT-BUTYL METHYL ETHER (UG/KG)	3.1	U	3.8	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/KG)	3.1	U	3.8	U	NC	
				TOLUENE (UG/KG)	3.1	U	3.8	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/KG)	3.1	U	3.8	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/KG)	3.1	U	3.8	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/KG)	3.1	U	3.8	U	NC	
				TRICHLOROFLUOROMETHANE (UG/KG)	6.2	U	7.5	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
SP3119	LORNG_SB21001_0-1_06182022_K	LORNG_SB21001_0-1_06182022FD_K	VOCs	VINYL ACETATE (UG/KG)	3.1	U	3.8	U	NC	
				VINYL CHLORIDE (UG/KG)	6.2	U	7.5	U	NC	
			WetChem	SOLIDS, PERCENT (PERCENT)	78		73		7	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

ng/L = nanograms per liter

RPD = relative percent difference

SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Round 1 Soil Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Wood	Wood Environment & Infrastructure Solutions, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Soil Round 1 Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_SB01012_8-10_06062022	FA96351	2206057	4:2 Fluorotelomer sulfonate (4:2 FTS)	1.1	U	0.973	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	1.1	U	0.973	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	1.1	U	0.973	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	1.1	U	0.973	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.1	U	0.973	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	1.1	U	0.973	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.1	U	0.973	U	NC
			Perfluorobutanoic acid (PFBA)	1.1	U	0.973	U	NC
			Perfluorodecane sulfonate (PFDS)	1.1	U	0.973	U	NC
			Perfluorodecanoic acid (PFDA)	1.1	U	0.973	U	NC
			Perfluorododecanoic acid (PFDoA)	1.1	U	0.973	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.1	U	0.973	U	NC
			Perfluoroheptanoic acid (PFHpA)	1.1	U	0.973	U	NC
			Perfluorohexanesulfonic acid (PFHxS)	1.1	U	0.746	J	NC
			Perfluorohexanoic acid (PFHxA)	1.1	U	0.973	U	NC
			Perfluorononanesulfonic acid (PFNS)	1.1	U	0.973	U	NC
			Perfluorononanoic acid (PFNA)	1.1	U	0.973	U	NC
			Perfluorooctane sulfonamide (PFOSA)	1.1	U	0.973	U	NC
			Perfluorooctanesulfonic acid (PFOS)	2.6		3.36		26
			Perfluorooctanoic acid (PFOA)	1.1	U	0.973	U	NC
			Perfluoropentanesulfonic acid (PFPeS)	1.1	U	0.973	U	NC
			Perfluoropentanoic acid (PFPeA)	1.1	U	0.973	U	NC
			Perfluorotetradecanoic acid (PFTeDA)	1.1	U	0.973	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1.1	U	0.973	U	NC
			Perfluoroundecanoic acid (PFUnA)	1.1	U	0.973	U	NC

Notes:

No data qualifiers were applied to field sample results based on split sample comparison.

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

ug/kg = micrograms per kilogram

Created By: ALJ 12/04/2022
Checked By: JAR 03/07/2023

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Groundwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, in May 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Vista Analytical Laboratory (Vista) in El Dorado Hills, California, as summarized below.

SGS analyzed 185 samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 32 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Methods 8011 and 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polynuclear Aromatic Hydrocarbons (PAHs) and Select SVOCs by SW846 Methods 8270C Selected Ion Monitoring (SIM) and 8270D SIM
- Pesticides by SW846 Method 8081B
- Polychlorinated Biphenyls (PCBs) by SW846 Method 8082A
- Metals by SW846 Methods 6010C, 6020A, and 7470A
- Perchlorate (subcontracted to Eurofins Test America Laboratory (TAL) in South Burlington, Vermont) by SW846 Method 6850

Duplicates of groundwater samples LORNG_JBW8003B_05232022 and LORNG_JMW0406_05062022 were collected and submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista) as interlaboratory comparison assessment samples. Vista analyzed two samples for PFAS by Method MS014.0, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the USDoD Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Comparison Assessment Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures and all other chemistry data were validated using Stage 2A procedures. Ten percent of the PFAS and other chemistry data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), USEPA National Functional Guidelines for Superfund Data Review (USEPA, 2020a; USEPA, 2020b), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in

Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CCL = Continuing calibration standard recovery less than lower control limit
CVHL = Continuing calibration standard recovery greater than upper control limit
IAG = Ion abundance ratio outside calculated limits
LBL = Laboratory blank contamination less than reporting limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCH = LCS recovery greater than upper control limit
LCL = LCS recovery less than lower control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
SDL = Dissolved metals concentration more than twenty percent greater than total metals concentration
SGL = Surrogate recovery less than lower control limit
SVLL = Second source verification standard recovery less than lower control limit
TBG = Trip blank concentration greater than reporting limit

Results reported for LORNG_JBW8003B_05232022SPLIT and LORNG_JMW0406_05062022SPLIT from Vista are included in this report in order to analyze the results of the interlaboratory comparison only and are not considered to be included in the final data set of the Loring RI sampling program and are therefore not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS
Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_AA11MW01_05072022
LORNG_JMW0882-05182022
LORNG_JMW1565-05192022
LORNG_CBW02_05192022
LORNG_JMW0980_05202022
LORNG_LF3MW4_05202022
LORNG_JMW0961_05212022
LORNG-UNK-033_05222022FD

LORNG_JBW7314_05232022

Non-detect results for perfluorotetradecanoic acid (PFTeDA) and perfluorooctane sulfonamide (PFOSA) in sample LORNG_JBW7314_05232022 were qualified as rejected (R) based on extracted internal standard (EIS) percent recoveries less than the DoD PFAS validation guideline limit of 20. Results for PFTeDA and PFOSA in the affected sample are considered unusable for project objectives.

PFAS detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for MS/MSD recovery, EIS recovery, quantitation ion signal to noise ratio, and/or transition ion ratio. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Reporting limits for PFAS were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for EIS recovery. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 4,625 individual PFAS results reported for the groundwater event, a total of 11 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents a PFAS data completeness of 99.8% for the groundwater data set.

VOCs

A low concentration detection of methylene chloride in sample LORNG_JB7339B_05052022 was qualified non-detect (U) at the reported concentration based on contamination in the associated trip blank. No impact on data usability was identified.

Of the 1,768 individual VOC results (Methods 8260C and 8011) reported for the groundwater event, no results were qualified as rejected. This represents a VOC data completeness of 100% for the groundwater event.

SVOCs

The SVOC LCS/LCSDs associated with the samples listed below had percent recoveries for a subset of analytes below the lower rejection limit of 10. Reporting limits for the affected analytes in the listed samples were qualified rejected (R) as summarized in Table 3. Results for affected analytes in these samples are considered unusable for project objectives:

LORNG_JBW7339B_05052022_K
LORNG_JBW7348_05052022_K
LORNG_JMW0445_05082022_K
LORNG_JMW0683-05202022_K
LORNG_OW16001-05202022_K

In addition, for sample LORNG_JBW7348_05052022_K, surrogate and MS/MSD recoveries were also less than control limits, and for a subset of SVOCs the MS/MSD recoveries were less than the QC rejection limit of 10 percent, and associated results are considered unusable for project objectives.

The result for 1-methylnaphthalene in sample LORNG_JMW0445_05082022_K was qualified estimated (J) based on the relative percent difference between LCS/LCSD recoveries. The result is considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Benzyl alcohol (15 ug/L) and bis(2-ethylhexyl)phthalate (4.1 ug/L) were detected below the LOQ in the method blanks (MB) associated with a subset of samples. Sample concentrations were less than the method blank concentrations and results were qualified not-detected (U) at the LOD. Although the LODs for benzyl alcohol and bis(2-ethylhexyl)phthalate are greater than associated project action limits (PALs), MDLs were less than the PALs and results are interpreted to be usable for project objectives.

Reporting limits for SVOCs were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery, LCS/LCSD RPD, MS/MSD recovery, MS/MSD RPD, surrogate recovery, instrument calibration check standard recovery, and/or holding time. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Of the 784 individual SVOC results (Method 8270D) reported for the groundwater event, a total of 31 results were qualified as rejected (R) and are interpreted to be unusable for project objectives. This represents an SVOC data completeness of 96% for the groundwater data set.

PAHs and Select SVOCs by SIM

Reporting limits for PAHs and Select SVOCs by SIM were qualified estimated (UJ) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery, LCS/LCSD RPD, MS/MSD recovery, MS/MSD RPD, and/or holding time. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties and/or data gaps that may occur from using estimated reporting limits should be considered during contamination assessment or evaluation of contaminant data against project action limits.

PAH detections were qualified estimated (J) in a subset of samples based on associated QC results exceeding limits for LCS/LCSD recovery and/or LCS/LCSD RPD. Affected samples and associated qualified results are summarized in Table 3. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Low concentration detections of benzo(b)fluoranthene, pyrene, benzo(g,h,i)perylene, and/or indeno(1,2,3-cd)pyrene were qualified not-detected (U) at the LOD in a subset of samples based on contamination in the associated method blanks. LODs for benzo(b)fluoranthene, pyrene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene are less than the associated PALs and no impact to data usability was identified.

Of the 260 individual PAH and select SVOCs by SIM results (Methods 8270C SIM and 8270D SIM) reported for the groundwater event, no results were qualified as rejected. This represents a PAH and select SVOCs by SIM data completeness of 100% for the groundwater event.

Pesticides and PCBs

No data qualifications were required. Of the 82 individual pesticides and PCBs results reported for the groundwater event, no results were qualified as rejected. This represents a pesticides and PCBs data completeness of 100% for the groundwater event.

Metals

Low concentration detections of total and dissolved antimony, and total potassium, selenium, thallium, and zinc, in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated laboratory method blanks. LODs for potassium and zinc are less than associated PALs and results for potassium and zinc are considered usable for project objectives. Although the LODs for antimony in a subset of samples and selenium in all samples are greater than associated project action limits (PALs), MDLs are less than the PALs and results for antimony and selenium are interpreted to be usable for project objectives. The LOD and MDL for thallium are greater than the PAL. The potential data gaps that may occur from using non-detect results for thallium should be considered during contamination assessment.

Low concentration detections of total iron, potassium, and thallium in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated instrument calibration blanks. LODs for potassium and zinc are less than associated PALs and results for potassium and zinc are considered usable for project objectives. The LOD and MDL for thallium are greater than the PAL. The potential data gaps that may occur from using non-detect results for thallium should be considered during contamination assessment.

Low concentration detections of dissolved antimony, lead, and mercury in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated field blanks. Although the LODs for lead and mercury are greater than the associated PALs, the MDLs are less than the PALs and results for lead and mercury are interpreted to be usable for project objectives. Detections of dissolved antimony were qualified not detected at reported sample concentrations, which were less than the PAL for antimony. Detections of dissolved barium in samples LORNG_JBW7338B_05092022F and LORNG_JBW7711_05092022F and zinc in sample LORNG_JBW7338B_05092022F were qualified estimated (J) based on contamination in the associated field blanks. Results for dissolved antimony, barium, and zinc are interpreted to be usable as qualified.

Results for total iron and magnesium in sample LORNG_JBW7338B_05092022 were qualified estimated (J) based on MS/MSD percent recoveries that were slightly greater than the QC limits. Results are considered usable as qualified. The uncertainties that may occur from using estimated detections should be considered during contamination assessment or evaluation of contaminant data against project action limits.

Results for total and dissolved zinc in samples LORNG_JMW0445_05082022 and LORNG_JBW7338B_05092022 were qualified estimated (J) based on dissolved concentrations that were more than an order of magnitude greater than the total concentrations. Potential high bias for the reported dissolved zinc results and low bias for the reported total zinc results should be considered when using these data.

Of the 437 individual total and dissolved metals results (Methods 6010C, 6020A, and 7470A) reported for the groundwater event, no results were qualified as rejected. This represents a metals data completeness of 100% for the groundwater event.

Perchlorate

Perchlorate in sample LORNG_JBW7339B_05052022 was analyzed at a dilution (1000X) resulting in an elevated LOD as indicated in Table 2 that was greater than the PAL. With the exception of sample LORNG_JBW7339B_05052022, all reported LODs were less than the PAL. The LODs reported by the laboratory for undiluted samples did not match the LOD specified in the QAPP; however, all LODs for undiluted samples were less than the PAL and no impact to data usability was identified. The potential data gap that may occur from using the non-detect result for perchlorate in sample LORNG_JBW7339B_05052022 should be considered during contamination assessment.

No data qualifications were required for perchlorate. Of the 12 individual perchlorate results reported for the groundwater event, no results were qualified as rejected. This represents a perchlorate data completeness of 100% for the groundwater event.

Laboratory reporting limits (RLs) and/or MDLs for all samples in the groundwater event are less than the Project Action Limits (PALs) identified in the QAPP with the following exception:

- Reporting limits for a subset of VOCs, SVOCs, and metals as reported by the laboratory do not meet the PALs.

Of the overall 7,968 individual results reported for the groundwater event, 42 results were qualified as rejected. This represents an overall data completeness of 99% for the groundwater event.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration

* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 MS/MSD

The percent recovery of PFOA in the matrix spike duplicated (MSD) associated with sample LORNG_JBW7326B_05102022 was below the associated DoD acceptance limit (70). PFOA was detected in sample LORNG_JBW7326B_05102022 and the result was qualified as estimated (J).

2.1.2 Extracted Internal Standard Recovery

The extracted internal standard (EIS) percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

Non-detect results for N-MeFOSA in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG_AA11MW01_05072022
LORNG_JMW0882_05182022
LORNG_JMW1565-05192022
LORNG_CBW02_05192022
LORNG_JMW0980_05202022
LORNG_LF3MW4_05202022
LORNG_JMW0961_05212022
LORNG-UNK-033_05222022FD
LORNG_JBW7314_05232022

Non-detect results for PFTeDA and PFOSA in sample LORNG_JBW7314_05232022 were qualified as rejected (R) based on EIS percent recoveries less than 20. Results for PFTeDA and PFOSA in the affected sample are considered unusable for project objectives.

Reporting limits for N-MeFOSA in the following samples were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

LORNG_JMW0505_05052022
LORNG_JBW7336A_05052022FD
LORNG_JEBS-4_05052022
LORNG_JBW7335B_05062022

LORNG_JBW0241A_05062022
LORNG_JBW6001_05062022
LORNG_JBW6001_05062022FD
LORNG_AA11MW01_05072022FD
LORNG_JPZ0686_05092022
LORNG_JPZ0606_05092022FD
LORNG_OW21005_05092022
LORNG_JBW7326B_05102022
LORNG_JMW0880_05182022
LORNG_OW17001_05172022FD
LORNG_AA07MW01_05192022
LORNG_AA07MW02_05192022
LORNG_LF2MW1_05192022
LORNG_LF2MW1_05192022FD
LORNG_LF2MW2_05192022
LORNG_JMW0602_05192022
LORNG_LF2_MW3_05192022
LORNG_MMW0002_05202022
LORNG_USGS-2_05192022
LORNG-UNK-044_05192022
LORNG_UGS-2_125_05192022
LORNG_JMW0683_05202022
LORNG_JMW0941_05202022
LORNG_JMW0982_05202022
LORNG_JMW0991_05212022
LORNG_JMW7916_05212022
LORNG_044-RW01_05232022
LORNG_JMW8004B_05232022
LORNG_043-MW03_05172022
LORNG_MMW0006_05172022
LORNG_MMW0006_05172022FD
LORNG_MMW0132_05172022
LORNG_MMW0132_05172022FD

Reporting limits for PFTeDA in samples LORNG_JPZ0606_05092022, LORNG_JMW1565_05192022. LORNG_MMW0002_05202022, LORNG_JMW0980_05202022, and LORNG_JMW0961_05212022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for FOSA in samples LORNG_JPZ0606_05092022 and LORNG_JMW0882_05182022 were qualified as estimated (UJ) based on EIS percent recoveries less than 50.

The reporting limit for N-MeFOSAA in sample LORNG_MMW0002_05202022 was qualified as estimated (UJ) based on EIS percent recoveries less than 50.

Reporting limits for PFPeA and PFHxA in sample LORNG_LF2MW1_05192022 were qualified estimated (UJ) based on EIS percent recoveries less than 50.

Results for PFPeA and PFHxA in sample LORNG_JMW0602_05192022 were qualified estimated (J) based on EIS percent recoveries less than 50.

2.1.3 Miscellaneous

The transition ion ratio for PFOSA in sample LORNG_JBW7339B_05052022 was outside the acceptable ion ratio range calculated from the associated daily calibration standard. The PFOSA result in the sample LORNG_JBW7339B_05052022 was qualified estimated (J).

The signal to noise ratio for the quantitation ion of PFBS in sample LORNG_OW10005_05062022 was less than the lower QC acceptance limit of 10. The PFBS result for sample LORNG_OW10005_05062022 was qualified estimated (J).

2.2 VOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.2.1 QC Blanks

Methylene chloride was detected in the trip blank LORNG_TB01_05052022 (7.2 ug/L) associated with sample LORNG_JBW7339B_05052022. The detection of methylene chloride in sample LORNG_JBW7339B_05052022 was reported above the LOQ and the result was qualified as not-detected (U) at the reported result.

2.3 SVOCs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
  LCS
  MS/MSD
* Field Duplicates
  Surrogate
* Reporting Limits
* Electronic Data Verification
  Initial Calibration
  Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.3.1 Holding Time

Sample LORNG_JMW0683_05202022 reported all acid surrogates' percent recoveries below the lower rejection QC limit. The sample was re-extracted 10 days outside of holding time and surrogate recoveries were within QC limits. All acid fraction analytes from the initial run have been refused and results from the re-extraction have been reported. All reporting limits from the re-extracted analysis were qualified estimated (UJ) due to exceeding the extraction holding time.

2.3.2 QC Blanks

Benzyl alcohol and bis(2-ethylhexyl)phthalate were detected below the LOQ in the method blanks associated with samples in sample delivery groups WOOD-LORING 2 and SP2222. Detected concentrations of both analytes in associated samples were less than the reported concentrations in the method blanks. Results were qualified not-detected (U) at the LOD.

2.3.3 Laboratory Control Sample

Percent recoveries for a subset of SVOCs in the LCS associated with samples LORNG_JBW7348_05052022, LORNG_JBW7339B_05052022, and LORNG_JMW0445_05082022 were less than the QC rejection limit of 10. The LCS/LCSD RPDs for several SVOCs were outside of the acceptance criteria. The affected SVOCs were not detected in the sample LORNG_JBW7348_05052022 and the reporting limits were qualified as rejected (R).

In the LCSD associated with field samples LORNG_JMW0683_05202022 and LORNG_OW16001_052022, the percent recovery of hexachlorocyclopentadiene was less than the QC rejection limit of 10. Hexachlorocyclopentadiene was not detected in the associated samples and results were qualified rejected (R).

The percent recoveries and relative percent differences for a subset of analytes in numerous laboratory control samples (LCS) and/or laboratory control sample duplicates (LCSD) were outside of project limits. Results and reporting limits for the affected analytes in the associated samples were qualified estimated (J/UJ).

2.3.4 MS/MSD

Percent recoveries for a subset of SVOCs in the MS/MSD associated with sample LORNG_JBW7348_05052022 were less than the lower QC acceptance limit and in some cases less than the QC rejection limit. MS/MSD RPDs for the subset of parameters were also outside of the acceptance criteria. Affected SVOCs were not detected in sample LORNG_JBW7348_05052022 and results were previously qualified as rejected (R) based on low recoveries in the associated LCS/LCSD.

2.3.5 Surrogates

Percent recoveries for two of three acid-extractable surrogates associated with sample LORNG_JBW7348_05052022 (13.1/32.4) were less than the lower control limits, indicating potential low bias. The acid fraction results for sample LORNG_JBW7348_05052022 were qualified as estimated (UJ/J). Results for a subset of acid fraction results were previously qualified rejected based on low LCS/LCSD and MS/MSD recoveries.

2.3.6 Initial/Continuing Calibration

Reporting limits for benzaldehyde, benzidine, and benzoic acid were qualified estimated (UJ) based on instrument calibration check standard and/or second source verification standard recoveries outside project control limits. Results for benzidine and benzoic acid in sample LORNG_JBW7348_05052022_K were previously qualified rejected based on low LCS/LCSD and MS/MSD recoveries.

2.4 PAHs and Select SVOCs by SIM

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
  LCS
  MS/MSD

* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.4.1 Holding Time

For sample LORNG_JMW0683_052022, the percent recovery of surrogate 2,4-dibromophenol was less than the QC rejection limit of 10. The sample was re-extracted 11 days outside of hold time and surrogate recoveries were within limits. Results for acid-fraction analytes from the re-extracted analysis were selected for final reporting. Based on extraction after expiration of the holding time, reporting limits for all analytes reported from the re-extraction were qualified estimated (UJ).

2.4.2 QC Blanks

In the method blank associated with sample LORNG_JMW0683_05202022, benzo(b)fluoranthene and pyrene were detected at concentrations less than the LOQ. Results for both analytes in sample LORNG_JMW0683_05202022 were qualified not-detected (UJ) at the LOD.

The method blank associated with sample LORNG_AA07MW01_05192022 had concentrations of benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene less than the LOQ. Results for both analytes in sample LORNG_AA07MW01_05192022 were qualified not-detected (U) at the LOD.

2.4.3 LCS

The SIM LCS/LCSDs associated with the samples listed below had percent recoveries and/or relative percent differences (RPDs) for a subset of analytes outside of project limits. Results and reporting limits for affected analytes in the listed samples were qualified estimated (J/UJ):

LORNG_JBW7339B_05052022_K
LORNG_JBW7348_05052022_K
LORNG_JMW0445_05082022_K
LORNG_JMW0683-05202022_K
LORNG_OW16001-05202022_K
LORNG_MMW3402R_05212022_K
LORNG_BW05007-05232022_K
LORNG_BW05007-05232022FD_K

2.4.4 MS/MSD

Percent recovery of benzo(a)pyrene in the MS/MSD associated with sample LORNG_OW21005_05092022 was less than QC limits. The reporting limit for benzo(a)pyrene in sample LORNG_OW21005_05092022 was qualified estimated (UJ).

Percent recoveries of pentachlorophenol, anthracene, and benzo(a)pyrene in the MS and/or MSD associated with sample LORNG_JBW7348_05052022 were less than the lower QC acceptance limit, and the MS/MSD RPD was outside acceptance criteria for pentachlorophenol. Pentachlorophenol, anthracene, and benzo(a)pyrene were not detected in sample LORNG_JBW7348_05052022 and the reporting limits were qualified as estimated (UJ).

2.5 Pesticides

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.6 PCBs

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD

* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.7 Metals

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
* Field Duplicates
* Surrogate
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Total/Dissolved Solids
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.7.1 QC Blanks

Low concentration detections of total and dissolved antimony, and total potassium, selenium, thallium, and zinc, in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated laboratory method blanks. Qualified results are summarized in Table 3 with reason code LBL or LBM.

Low concentration detections of total iron, potassium, and thallium in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated instrument calibration blanks. Qualified results are summarized in Table 3 with reason code CBL.

Low concentration detections of dissolved antimony, lead, and mercury in one or more samples were qualified not detected (U) at the LOD or reported sample concentrations based on contamination in the associated field blanks. Detections of dissolved barium and zinc in sample LORNG_JBW7338B_05092022F were qualified estimated (J) based on contamination in the associated field blanks. Qualified results are included in Table 3 with reason code FBL or FBG.

2.7.2 MS/MSD

The matrix spike (MS)/matrix spike duplicate (MSD) associated with sample LORNG_JBW7338B_05092022 had percent recoveries for total iron and magnesium that were greater than QC limits. Results for these analytes in the associated sample were qualified estimated (J).

2.7.3 Total/Dissolved Concentrations

The dissolved zinc concentrations exceeded the total zinc concentrations in samples LORNG_JMW0445_05082022 and LORNG_JBW7338B_05092022. Results for total and dissolved zinc were qualified estimated (J) in samples LORNG_JMW0445_05082022 and LORNG_JBW7338B_05092022.

2.8 Perchlorate

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
* Surrogate
  Reporting Limits
* Electronic Data Verification

* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.8.1 Reporting Limits

Perchlorate in sample LORNG_JBW7339B_05052022 was analyzed at a dilution (1000x). Elevated reporting limits are reported as indicated in Table 2.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020a. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Emergency and Remedial Response; EPA 540-R-20-005; November 2020.

USEPA, 2020b. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review"; Office of Superfund Remediation and Technology Innovation; EPA 542-R-20-006; November 2020.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



September 6, 2022

Data Validation: Amber Jones



September 6, 2022

Reviewed by: Julie Ricardi



October 5, 2022

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
2205183	JBW8003B	LORNG_JBW8003B_05232022SPLIT	2205183-01	5/23/2022	WG	N		25
FA95439	LISOURCE	LORING_LISOURCE_05052022	FA95439-1	5/5/2022	WH	N	25	
FA95440	JBW7339B	LORNG_JBW7339B_05052022	FA95440-1	5/5/2022	WG	N	25	
	JBW7341B	LORNG_JBW7341B_05052022	FA95440-2	5/5/2022	WG	N	25	
	JBW7350	LORNG_JBW7350_05052022	FA95440-3	5/5/2022	WG	N	25	
	JMW-0505	LORNG_JMW0505_05052022	FA95440-4	5/5/2022	WG	N	25	
		LORNG_JMW0505_05052022FD	FA95440-5	5/5/2022	WG	FD	25	
	JPZ0342	LORNG_JPZ0342_05052022	FA95440-6	5/5/2022	WG	N	25	
FA95511	FIELDQC	LORNG_EB001_05052022	FA95511-1	5/5/2022	WQ	EB	25	
	JBW7335A	LORNG_JBW7335A_05062022	FA95511-13	5/6/2022	WG	N	25	
	JBW7335B	LORNG_JBW7335B_05062022	FA95511-14	5/6/2022	WG	N	25	
	JBW7336A	LORNG_JBW7336A_05052022	FA95511-2	5/5/2022	WG	N	25	
		LORNG_JBW7336A_05052022FD	FA95511-3	5/5/2022	WG	FD	25	
	JBW7339A	LORNG_JBW7339A_05052022	FA95511-4	5/5/2022	WG	N	25	
	JBW7347B	LORNG_JBW7347B_05062022	FA95511-6	5/6/2022	WG	N	25	
	JBW7348	LORNG_JBW7348_05052022	FA95511-5	5/5/2022	WG	N	25	
	JEBS-4	LORNG_JEBS-4_05052022	FA95511-8	5/5/2022	WG	N	25	
	JMW0301C	LORNG_JMW0301C_05052022	FA95511-9	5/5/2022	WG	N	25	
	JMW1665	LORNG_JMW1665_05052022	FA95511-10	5/5/2022	WG	N	25	
	JMW1684	LORNG_JMW1684_05052022	FA95511-11	5/5/2022	WG	N	25	
	JMW1762	LORNG_JMW1762_05052022	FA95511-7	5/5/2022	WG	N	25	
	JPZ1780	LORNG_JPZ1780_05062022	FA95511-12	5/6/2022	WG	N	25	
FA95583	AA11MW-01	LORNG_AA11MW01_05072022	FA95583-11	5/7/2022	WG	N	25	
		LORNG_AA11MW01_05072022FD	FA95583-12	5/7/2022	WG	FD	25	
	AA11MW-02	LORNG_AA11MW02_05072022	FA95583-20	5/7/2022	WG	N	25	
	BW10006	LORNG_BW10006_05062022	FA95583-13	5/6/2022	WG	N	25	
	BW12005	LORNG_BW12005_05062022	FA95583-1	5/6/2022	WG	N	25	
	BW14005	LORNG_BW14005_05072022	FA95583-21	5/7/2022	WG	N	25	
	FIELDQC	LORNG_EB002_05062022	FA95583-2	5/6/2022	WQ	EB	25	
		LORNG_EB003_05062022	FA95583-3	5/6/2022	WQ	EB	25	
		LORNG_EB004_05082022	FA95583-30	5/8/2022	WQ	EB	25	
	JBW7345B	LORNG_JBW7345B_05062022	FA95583-4	5/6/2022	WG	N	25	
	JBW7614	LORNG_JBW7614_05082022	FA95583-31	5/8/2022	WG	N	25	
	JBW7714	LORNG_JBW7714_05082022	FA95583-32	5/8/2022	WG	N	25	
	JBW7734	LORNG_JBW7734_05072022	FA95583-22	5/7/2022	WG	N	25	

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/6/22

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95583	JBW7737A	LORNG_JBW7737A_05062022	FA95583-14	5/6/2022	WG	N	25	
	JBW7737B	LORNG_JBW7737B_05062022	FA95583-15	5/6/2022	WG	N	25	
		LORNG_JBW7737B_05062022FD	FA95583-16	5/6/2022	WG	FD	25	
	JBW7738A	LORNG_JBW7738A_05082022	FA95583-33	5/8/2022	WG	N	25	
	JBW7738B	LORNG_JBW7738B_05072022	FA95583-23	5/7/2022	WG	N	25	
	JBW7752	LORNG_JBW7752_05072022	FA95583-24	5/7/2022	WG	N	25	
	JMW-0241A	LORNG_JMW0241A_05062022	FA95583-5	5/6/2022	WG	N	25	
	JMW-0406	LORNG_JMW0406_05062022	FA95583-17	5/6/2022	WG	N	25	
	JMW-0416B	LORNG_JMW0416B_05072022	FA95583-25	5/7/2022	WG	N	25	
	JMW0445	LORNG_JMW0445_05082022	FA95583-34	5/8/2022	WG	N	25	
	JMW1981	LORNG_JMW1981_05082022	FA95583-35	5/8/2022	WG	N	25	
	JMW1982	LORNG_JMW1982_05082022	FA95583-36	5/8/2022	WG	N	25	
	JMW6001	LORNG_JMW6001_05062022	FA95583-6	5/6/2022	WG	N	25	
		LORNG_JMW6001_05062022FD	FA95583-7	5/6/2022	WG	FD	25	
	JPZ7808	LORNG_JPZ7808_05062022	FA95583-18	5/6/2022	WG	N	25	
	MMW0009	LORNG_MMW0009_05062022	FA95583-19	5/6/2022	WG	N	25	
	MMW0330	LORNG_MMW0330_05072022	FA95583-26	5/7/2022	WG	N	25	
	MMW0422	LORNG_MMW0422_05072022	FA95583-27	5/7/2022	WG	N	25	
	MMW0423	LORNG_MMW0423_05072022	FA95583-28	5/7/2022	WG	N	25	
	OW10005	LORNG_OW10005_05062022	FA95583-8	5/6/2022	WG	N	25	
	OW14004	LORNG_OW14004_05072022	FA95583-29	5/7/2022	WG	N	25	
	SB/OW12001	LORNG_OW12001_05062022	FA95583-9	5/6/2022	WG	N	25	
		LORNG_OW12001_05062022FD	FA95583-10	5/6/2022	WG	FD	25	
FA95595	FIELDQC	LORNG_EB005_05092022	FA95595-1	5/9/2022	WQ	EB	25	
	JBW7338B	LORNG_JBW7338B_05092022	FA95595-2	5/9/2022	WG	N	25	
	JBW7710B	LORNG_JBW7710B_05092022	FA95595-3	5/9/2022	WG	N	25	
	JBW7711	LORNG_JBW7711_05092022	FA95595-9	5/9/2022	WG	N	25	
	JBW7753A	LORNG_JBW7753A_05092022	FA95595-4	5/9/2022	WG	N	25	
	JMW0681	LORNG_JMW0681_05092022	FA95595-10	5/9/2022	WG	N	25	
	JMW3102	LORNG_JMW3102_05092022	FA95595-5	5/9/2022	WG	N	25	
	JPZ0348	LORNG_JPZ0348_05092022	FA95595-6	5/9/2022	WG	N	25	
	JPZ0349	LORNG_JPZ0349_05092022	FA95595-7	5/9/2022	WG	N	25	
	JPZ0606	LORNG_JPZ0606_05092022	FA95595-11	5/9/2022	WG	N	25	
		LORNG_JPZ0606_05092022FD	FA95595-12	5/9/2022	WG	FD	25	
	JPZ0686	LORNG_JPZ0686_05092022	FA95595-8	5/9/2022	WG	N	25	

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/6/22

Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95595	MMW0007A	LORNG_MMW0007A_05092022	FA95595-15	5/9/2022	WG	N	25	
	MMW0007B	LORNG_MMW0007B_05092022	FA95595-13	5/9/2022	WG	N	25	
	OW21005	LORNG_OW21005_05092022	FA95595-14	5/9/2022	WG	N	25	
FA95621	BSMW3S	LORNG_BSMW3S_05102022	FA95621-11	5/10/2022	WG	N	25	
	FIELDQC	LORNG_EB006_05102022	FA95621-1	5/10/2022	WQ	EB	25	
		LORNG_EB007_05102022	FA95621-2	5/10/2022	WQ	EB	25	
	JBW7203B	LORNG_JBW7203B_05102022	FA95621-3	5/10/2022	WG	N	25	
	JBW7304	LORNG_JBW7304_05102022	FA95621-12	5/10/2022	WG	N	25	
	JBW7326A	LORNG_JBW7326A_05102022	FA95621-4	5/10/2022	WG	N	25	
	JBW7326B	LORNG_JBW7326B_05102022	FA95621-5	5/10/2022	WG	N	25	
	JBW7912	LORNG_JBW7912_150_05102022	FA95621-13	5/10/2022	WG	N	25	
		LORNG_JBW7912_40_05102022	FA95621-14	5/10/2022	WG	N	25	
	JMW-0603	LORNG_JMW0603_05102022	FA95621-18	5/10/2022	WG	N	25	
	JMW3601	LORNG_JMW3601_05102022	FA95621-6	5/10/2022	WG	N	25	
	MMW0010	LORNG_MMW0010_05102022	FA95621-7	5/10/2022	WG	N	25	
	MMW0011	LORNG_MMW0011_05102022	FA95621-8	5/10/2022	WG	N	25	
	MMW0017	LORNG_MMW0017_05102022	FA95621-15	5/10/2022	WG	N	25	
	MMW0124	LORNG_MMW0124_05102022	FA95621-16	5/10/2022	WG	N	25	
		LORNG_MMW0124_05102022FD	FA95621-17	5/10/2022	WG	FD	25	
	RFW1147	LORNG_RFW1147_05102022	FA95621-9	5/10/2022	WG	N	25	
	USMW025	LORNG_USMW025_05102022	FA95621-10	5/10/2022	WG	N	25	
FA95783	FIELDQC	LORNG_FB01_05172022	FA95783-1	5/17/2022	WQ	AB	25	
		LORNG_FB02_05172022	FA95783-2	5/17/2022	WQ	AB	25	
		LORNG_FB03_05172022	FA95783-3	5/17/2022	WQ	AB	25	
		LORNG_FB04_05172022	FA95783-4	5/17/2022	WQ	AB	25	
FA95784	043-MW03	LORNG_043-MW03_05172022	FA95784-1	5/17/2022	WG	N	25	
	AA20MW-01	LORNG_AA20MW01_05172022	FA95784-2	5/17/2022	WG	N	25	
	JBW7203A	LORNG_JBW7203A_05172022	FA95784-3	5/17/2022	WG	N	25	
	JMW7322	LORNG_JMW7322_05172022	FA95784-4	5/17/2022	WG	N	25	
	MMW0006	LORNG_MMW0006_05172022	FA95784-5	5/17/2022	WG	N	25	
		LORNG_MMW0006_05172022FD	FA95784-6	5/17/2022	WG	FD	25	
	MMW0132	LORNG_MMW0132_05172022	FA95784-7	5/17/2022	WG	N	25	
		LORNG_MMW0132_05172022FD	FA95784-8	5/17/2022	WG	FD	25	
FA95834	AA20MW-02	LORNG_AA20MW02_05182022	FA95834-1	5/18/2022	WG	N	25	
	BW06005	LORNG_BW06005_05182022	FA95834-2	5/18/2022	WG	N	25	

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Checked by: JAR
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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95834	BW17004	LORNG_BW17004_05182022	FA95834-3	5/18/2022	WG	N	25	
	FIELDQC	LORNG_EB008_05182022	FA95834-13	5/18/2022	WQ	EB	25	
		LORNG_EB009_05182022	FA95834-14	5/18/2022	WQ	EB	25	
	JBW7403	LORNG_JBW7403_05182022	FA95834-4	5/18/2022	WG	N	25	
	JMW-0806	LORNG_JMW0806_05182022	FA95834-5	5/18/2022	WG	N	25	
	JMW0880	LORNG_JMW0880_05182022	FA95834-6	5/18/2022	WG	N	25	
	JMW0882	LORNG_JMW0882_05182022	FA95834-7	5/18/2022	WG	N	25	
	JMW0891	LORNG_JMW0891_05192022	FA95834-15	5/19/2022	WG	N	25	
	JMW1960	LORNG_JMW1960_05182022	FA95834-8	5/18/2022	WG	N	25	
	JMW3501	LORNG_JMW3501_05192022	FA95834-16	5/19/2022	WG	N	25	
	JPZ7704	LORNG_JPZ7704_05182022	FA95834-9	5/18/2022	WG	N	25	
	MMW0326	LORNG_MMW0326_05172022	FA95834-10	5/17/2022	WG	N	25	
	SB/OW17001	LORNG_OW17001_05172022	FA95834-11	5/17/2022	WG	N	25	
		LORNG_OW17001_05172022FD	FA95834-12	5/17/2022	WG	FD	25	
FA95870	AA07MW-01	LORNG_AA07MW01_05192022	FA95870-1	5/19/2022	WG	N	25	
FA95870	AA07MW-02	LORNG_AA07MW02_05192022	FA95870-2	5/19/2022	WG	N	25	
	CBW02	LORNG_CBW02_05192022	FA95870-7	5/19/2022	WG	N	25	
	FIELDQC	LORNG_EB010_05192022	FA95870-8	5/19/2022	WQ	EB	25	
		LORNG_EB011_05192022	FA95870-9	5/19/2022	WQ	EB	25	
	JMW-0602	LORNG_JMW0602_05192022	FA95870-10	5/19/2022	WG	N	25	
	JMW1565	LORNG_JMW1565_05192022	FA95870-3	5/19/2022	WG	N	25	
	LF2MW1	LORNG_LF2MW1_05192022	FA95870-4	5/19/2022	WG	N	25	
		LORNG_LF2MW1_05192022FD	FA95870-5	5/19/2022	WG	FD	25	
	LF2MW2	LORNG_LF2MW2_05192022	FA95870-6	5/19/2022	WG	N	25	
	LF2MW3	LORNG_LF2MW3_05192022	FA95870-11	5/19/2022	WG	N	25	
	MMW0002	LORNG_MMW0002_05202022	FA95870-12	5/20/2022	WG	N	25	
	UNK-044	LORNG-UNK-044_05192022	FA95870-14	5/19/2022	WG	N	25	
	USGS2	LORNG_USGS-2_125_05192022	FA95870-15	5/19/2022	WG	N	25	
		LORNG_USGS-2_40_05192022	FA95870-13	5/19/2022	WG	N	25	
FA95898	AA18MW-01	LORNG_AA18MW01_05222022	FA95898-26	5/22/2022	WG	N	25	
	AA18MW-02	LORNG_AA18MW02_05222022	FA95898-27	5/22/2022	WG	N	25	
	ASMW101	LORNG_ASMW101_05222022	FA95898-28	5/22/2022	WG	N	25	
	BW01005	LORNG_BW01005_05222022	FA95898-29	5/22/2022	WG	N	25	
		LORNG_BW01005_05222022FD	FA95898-30	5/22/2022	WG	FD	25	
	BW05006	LORNG_BW05006_05212022	FA95898-14	5/21/2022	WG	N	25	
	FIELDQC	LORNG_EB012_05202022	FA95898-1	5/20/2022	WQ	EB	25	

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Checked by: JAR
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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95898	FIELDQC	LORNG_EB013_05202022	FA95898-11	5/20/2022	WQ	EB	25	
		LORNG_EB014_05202022	FA95898-15	5/20/2022	WQ	EB	25	
		LORNG_EB015_05212022	FA95898-16	5/21/2022	WQ	EB	25	
		LORNG_EB016_05212022	FA95898-17	5/21/2022	WQ	EB	25	
		LORNG_EB017_05222022	FA95898-38	5/22/2022	WQ	EB	25	
		LORNG_EB018_05222022	FA95898-39	5/22/2022	WQ	EB	25	
		LORNG_EB019_05222022	FA95898-40	5/22/2022	WQ	EB	25	
	FMW3410	LORNG_FMW3410_05222022	FA95898-31	5/22/2022	WG	N	25	
	FMW3413	LORNG_FMW3413_05222022	FA95898-32	5/22/2022	WG	N	25	
	JBW7215B	LORNG_JBW7215B_05222022	FA95898-33	5/22/2022	WG	N	25	
	JBW7316	LORNG_JBW7316_05222022	FA95898-34	5/22/2022	WG	N	25	
	JBW8009	LORNG_JBW8009_05212022	FA95898-18	5/21/2022	WG	N	25	
	JMW0682	LORNG_JMW0682_05202022	FA95898-2	5/20/2022	WG	N	25	
	JMW0683	LORNG_JMW0683_05202022	FA95898-3	5/20/2022	WG	N	25	
	JMW0941	LORNG_JMW0941_05202022	FA95898-4	5/20/2022	WG	N	25	
	JMW0961	LORNG_JMW0961_05212022	FA95898-19	5/21/2022	WG	N	25	
	JMW0980	LORNG_JMW0980_05202022	FA95898-5	5/20/2022	WG	N	25	
	JMW0982	LORNG_JMW0982_05202022	FA95898-6	5/20/2022	WG	N	25	
	JMW0991	LORNG_JMW0991_05212022	FA95898-20	5/21/2022	WG	N	25	
	JMW0992	LORNG_JMW0992_05212022	FA95898-21	5/21/2022	WG	N	25	
	JMW7913	LORNG_JMW7913_05202022	FA95898-12	5/20/2022	WG	N	25	
	JMW7916	LORNG_JMW7916_05212022	FA95898-22	5/21/2022	WG	N	25	
FA95898	LF3MW3	LORNG_LF3MW3_05202022	FA95898-7	5/20/2022	WG	N	25	
	LF3MW4	LORNG_LF3MW4_05202022	FA95898-8	5/20/2022	WG	N	25	
	MMW0015	LORNG_MMW0015_05202022	FA95898-9	5/20/2022	WG	N	25	
	MMW0018B	LORNG_MMW0018B_05212022	FA95898-23	5/21/2022	WG	N	25	
	MMW3402R	LORNG_MMW3402R_05212022	FA95898-24	5/21/2022	WG	N	25	
	OW22001	LORNG_OW22001_05202022	FA95898-13	5/20/2022	WG	N	25	
	RFW1144	LORNG_RFW1144_05212022	FA95898-35	5/21/2022	WG	N	25	
	RFW-38	LORNG_RFW-38_05212022	FA95898-25	5/21/2022	WG	N	25	
	SB/OW16001	LORNG_OW16001_05202022	FA95898-10	5/20/2022	WG	N	25	
	UNK-033	LORNG-UNK-033_05222022	FA95898-36	5/22/2022	WG	N	25	
		LORNG-UNK-033_05222022FD	FA95898-37	5/22/2022	WG	FD	25	
FA95936	044-RW01	LORNG_044-RW01_05232022	FA95936-1	5/23/2022	WG	N	25	
	BW05007	LORNG_BW05007_05232022	FA95936-2	5/23/2022	WG	N	25	
		LORNG_BW05007_05232022FD	FA95936-3	5/23/2022	WG	FD	25	
	FIELDQC	LORNG_EB020_05232022	FA95936-9	5/23/2022	WQ	EB	25	

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95936	JBW7314	LORNG_JBW7314_05232022	FA95936-4	5/23/2022	WG	N	25	
	JBW8003B	LORNG_JBW8003B_05232022	FA95936-10	5/23/2022	WG	N	25	
	JBW8004B	LORNG_JMW8004B_05232022	FA95936-5	5/23/2022	WG	N	25	
	JMW8011	LORNG_JMW8011_05232022	FA95936-6	5/23/2022	WG	N	25	
	JPZ1382	LORNG_JPZ1382_05232022	FA95936-7	5/23/2022	WG	N	25	
	MMW8015	LORNG_MMW8015_05232022	FA95936-8	5/23/2022	WG	N	25	
FA95976	WWTP_WSW	LORNG_WWTP_WSW_05242022	FA95976-1	5/24/2022	WP	N	25	
FA96108	FIELDQC	LORNG_FB05_06012022	FA96108-1	6/1/2022	WQ	AB	25	

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WH = Equipment Wash Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/6/22

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
2205183	JBW8003B	LORNG_JBW8003B_05232022SPLIT	2205183-01	5/23/2022	WG	N		25
2205092	JMW0406	LORNG_JMW0406_05062022SPLIT	2205092-01	5/6/2022	WG	N		25
FA95439	LISOURCE	LORING_LISOURCE_05052022	FA95439-1	5/5/2022	WH	N	25	
FA95440	JBW7339B	LORNG_JBW7339B_05052022	FA95440-1	5/5/2022	WG	N	25	
	JBW7341B	LORNG_JBW7341B_05052022	FA95440-2	5/5/2022	WG	N	25	
	JBW7350	LORNG_JBW7350_05052022	FA95440-3	5/5/2022	WG	N	25	
	JMW-0505	LORNG_JMW0505_05052022	FA95440-4	5/5/2022	WG	N	25	
		LORNG_JMW0505_05052022FD	FA95440-5	5/5/2022	WG	FD	25	
	JPZ0342	LORNG_JPZ0342_05052022	FA95440-6	5/5/2022	WG	N	25	
FA95511	FIELDQC	LORNG_EB001_05052022	FA95511-1	5/5/2022	WQ	EB	25	
	JBW7335A	LORNG_JBW7335A_05062022	FA95511-13	5/6/2022	WG	N	25	
	JBW7335B	LORNG_JBW7335B_05062022	FA95511-14	5/6/2022	WG	N	25	
	JBW7336A	LORNG_JBW7336A_05052022	FA95511-2	5/5/2022	WG	N	25	
		LORNG_JBW7336A_05052022FD	FA95511-3	5/5/2022	WG	FD	25	
	JBW7339A	LORNG_JBW7339A_05052022	FA95511-4	5/5/2022	WG	N	25	
	JBW7347B	LORNG_JBW7347B_05062022	FA95511-6	5/6/2022	WG	N	25	
	JBW7348	LORNG_JBW7348_05052022	FA95511-5	5/5/2022	WG	N	25	
	JEBS-4	LORNG_JEBS-4_05052022	FA95511-8	5/5/2022	WG	N	25	
	JMW0301C	LORNG_JMW0301C_05052022	FA95511-9	5/5/2022	WG	N	25	
	JMW1665	LORNG_JMW1665_05052022	FA95511-10	5/5/2022	WG	N	25	
	JMW1684	LORNG_JMW1684_05052022	FA95511-11	5/5/2022	WG	N	25	
	JMW1762	LORNG_JMW1762_05052022	FA95511-7	5/5/2022	WG	N	25	
	JPZ1780	LORNG_JPZ1780_05062022	FA95511-12	5/6/2022	WG	N	25	
FA95583	AA11MW-01	LORNG_AA11MW01_05072022	FA95583-11	5/7/2022	WG	N	25	
		LORNG_AA11MW01_05072022FD	FA95583-12	5/7/2022	WG	FD	25	
	AA11MW-02	LORNG_AA11MW02_05072022	FA95583-20	5/7/2022	WG	N	25	
	BW10006	LORNG_BW10006_05062022	FA95583-13	5/6/2022	WG	N	25	
	BW12005	LORNG_BW12005_05062022	FA95583-1	5/6/2022	WG	N	25	
	BW14005	LORNG_BW14005_05072022	FA95583-21	5/7/2022	WG	N	25	
	FIELDQC	LORNG_EB002_05062022	FA95583-2	5/6/2022	WQ	EB	25	
		LORNG_EB003_05062022	FA95583-3	5/6/2022	WQ	EB	25	
		LORNG_EB004_05082022	FA95583-30	5/8/2022	WQ	EB	25	
	JBW7345B	LORNG_JBW7345B_05062022	FA95583-4	5/6/2022	WG	N	25	

Prepared by:AKN
Date:8/12/22
Checked by: CLC
Date: 1/23/23

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Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95583	JBW7614	LORNG_JBW7614_05082022	FA95583-31	5/8/2022	WG	N	25	
	JBW7714	LORNG_JBW7714_05082022	FA95583-32	5/8/2022	WG	N	25	
	JBW7734	LORNG_JBW7734_05072022	FA95583-22	5/7/2022	WG	N	25	
	JBW7737A	LORNG_JBW7737A_05062022	FA95583-14	5/6/2022	WG	N	25	
	JBW7737B	LORNG_JBW7737B_05062022	FA95583-15	5/6/2022	WG	N	25	
		LORNG_JBW7737B_05062022FD	FA95583-16	5/6/2022	WG	FD	25	
	JBW7738A	LORNG_JBW7738A_05082022	FA95583-33	5/8/2022	WG	N	25	
	JBW7738B	LORNG_JBW7738B_05072022	FA95583-23	5/7/2022	WG	N	25	
	JBW7752	LORNG_JBW7752_05072022	FA95583-24	5/7/2022	WG	N	25	
	JMW-0241A	LORNG_JMW0241A_05062022	FA95583-5	5/6/2022	WG	N	25	
	JMW-0406	LORNG_JMW0406_05062022	FA95583-17	5/6/2022	WG	N	25	
	JMW-0416B	LORNG_JMW0416B_05072022	FA95583-25	5/7/2022	WG	N	25	
	JMW0445	LORNG_JMW0445_05082022	FA95583-34	5/8/2022	WG	N	25	
	JMW1981	LORNG_JMW1981_05082022	FA95583-35	5/8/2022	WG	N	25	
	JMW1982	LORNG_JMW1982_05082022	FA95583-36	5/8/2022	WG	N	25	
	JMW6001	LORNG_JMW6001_05062022	FA95583-6	5/6/2022	WG	N	25	
		LORNG_JMW6001_05062022FD	FA95583-7	5/6/2022	WG	FD	25	
	JPZ7808	LORNG_JPZ7808_05062022	FA95583-18	5/6/2022	WG	N	25	
	MMW0009	LORNG_MMW0009_05062022	FA95583-19	5/6/2022	WG	N	25	
	MMW0330	LORNG_MMW0330_05072022	FA95583-26	5/7/2022	WG	N	25	
	MMW0422	LORNG_MMW0422_05072022	FA95583-27	5/7/2022	WG	N	25	
	MMW0423	LORNG_MMW0423_05072022	FA95583-28	5/7/2022	WG	N	25	
	OW10005	LORNG_OW10005_05062022	FA95583-8	5/6/2022	WG	N	25	
	OW14004	LORNG_OW14004_05072022	FA95583-29	5/7/2022	WG	N	25	
	SB/OW12001	LORNG_OW12001_05062022	FA95583-9	5/6/2022	WG	N	25	
		LORNG_OW12001_05062022FD	FA95583-10	5/6/2022	WG	FD	25	
FA95595	FIELDQC	LORNG_EB005_05092022	FA95595-1	5/9/2022	WQ	EB	25	
	JBW7338B	LORNG_JBW7338B_05092022	FA95595-2	5/9/2022	WG	N	25	
	JBW7710B	LORNG_JBW7710B_05092022	FA95595-3	5/9/2022	WG	N	25	
	JBW7711	LORNG_JBW7711_05092022	FA95595-9	5/9/2022	WG	N	25	
	JBW7753A	LORNG_JBW7753A_05092022	FA95595-4	5/9/2022	WG	N	25	
	JMW0681	LORNG_JMW0681_05092022	FA95595-10	5/9/2022	WG	N	25	
	JMW3102	LORNG_JMW3102_05092022	FA95595-5	5/9/2022	WG	N	25	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95595	JPZ0348	LORNG_JPZ0348_05092022	FA95595-6	5/9/2022	WG	N	25	
	JPZ0349	LORNG_JPZ0349_05092022	FA95595-7	5/9/2022	WG	N	25	
	JPZ0606	LORNG_JPZ0606_05092022	FA95595-11	5/9/2022	WG	N	25	
		LORNG_JPZ0606_05092022FD	FA95595-12	5/9/2022	WG	FD	25	
	JPZ0686	LORNG_JPZ0686_05092022	FA95595-8	5/9/2022	WG	N	25	
	MMW0007A	LORNG_MMW0007A_05092022	FA95595-15	5/9/2022	WG	N	25	
	MMW0007B	LORNG_MMW0007B_05092022	FA95595-13	5/9/2022	WG	N	25	
	OW21005	LORNG_OW21005_05092022	FA95595-14	5/9/2022	WG	N	25	
FA95621	BSMW3S	LORNG_BSMW3S_05102022	FA95621-11	5/10/2022	WG	N	25	
	FIELDQC	LORNG_EB006_05102022	FA95621-1	5/10/2022	WQ	EB	25	
		LORNG_EB007_05102022	FA95621-2	5/10/2022	WQ	EB	25	
	JBW7203B	LORNG_JBW7203B_05102022	FA95621-3	5/10/2022	WG	N	25	
	JBW7304	LORNG_JBW7304_05102022	FA95621-12	5/10/2022	WG	N	25	
	JBW7326A	LORNG_JBW7326A_05102022	FA95621-4	5/10/2022	WG	N	25	
	JBW7326B	LORNG_JBW7326B_05102022	FA95621-5	5/10/2022	WG	N	25	
	JBW7912	LORNG_JBW7912_150_05102022	FA95621-13	5/10/2022	WG	N	25	
		LORNG_JBW7912_40_05102022	FA95621-14	5/10/2022	WG	N	25	
	JMW-0603	LORNG_JMW0603_05102022	FA95621-18	5/10/2022	WG	N	25	
	JMW3601	LORNG_JMW3601_05102022	FA95621-6	5/10/2022	WG	N	25	
	MMW0010	LORNG_MMW0010_05102022	FA95621-7	5/10/2022	WG	N	25	
	MMW0011	LORNG_MMW0011_05102022	FA95621-8	5/10/2022	WG	N	25	
	MMW0017	LORNG_MMW0017_05102022	FA95621-15	5/10/2022	WG	N	25	
	MMW0124	LORNG_MMW0124_05102022	FA95621-16	5/10/2022	WG	N	25	
		LORNG_MMW0124_05102022FD	FA95621-17	5/10/2022	WG	FD	25	
	RFW1147	LORNG_RFW1147_05102022	FA95621-9	5/10/2022	WG	N	25	
	USMW025	LORNG_USMW025_05102022	FA95621-10	5/10/2022	WG	N	25	
FA95783	FIELDQC	LORNG_FB01_05172022	FA95783-1	5/17/2022	WQ	AB	25	
		LORNG_FB02_05172022	FA95783-2	5/17/2022	WQ	AB	25	
		LORNG_FB03_05172022	FA95783-3	5/17/2022	WQ	AB	25	
		LORNG_FB04_05172022	FA95783-4	5/17/2022	WQ	AB	25	
FA95784	043-MW03	LORNG_043-MW03_05172022	FA95784-1	5/17/2022	WG	N	25	
	AA20MW-01	LORNG_AA20MW01_05172022	FA95784-2	5/17/2022	WG	N	25	
	JBW7203A	LORNG_JBW7203A_05172022	FA95784-3	5/17/2022	WG	N	25	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS	
					Analysis Method		M537	MS014.0
					Fraction		T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95784	JMW7322	LORNG_JMW7322_05172022	FA95784-4	5/17/2022	WG	N	25	
	MMW0006	LORNG_MMW0006_05172022	FA95784-5	5/17/2022	WG	N	25	
		LORNG_MMW0006_05172022FD	FA95784-6	5/17/2022	WG	FD	25	
	MMW0132	LORNG_MMW0132_05172022	FA95784-7	5/17/2022	WG	N	25	
		LORNG_MMW0132_05172022FD	FA95784-8	5/17/2022	WG	FD	25	
FA95834	AA20MW-02	LORNG_AA20MW02_05182022	FA95834-1	5/18/2022	WG	N	25	
	BW06005	LORNG_BW06005_05182022	FA95834-2	5/18/2022	WG	N	25	
	BW17004	LORNG_BW17004_05182022	FA95834-3	5/18/2022	WG	N	25	
	FIELDQC	LORNG_EB008_05182022	FA95834-13	5/18/2022	WQ	EB	25	
		LORNG_EB009_05182022	FA95834-14	5/18/2022	WQ	EB	25	
	JBW7403	LORNG_JBW7403_05182022	FA95834-4	5/18/2022	WG	N	25	
	JMW-0806	LORNG_JMW0806_05182022	FA95834-5	5/18/2022	WG	N	25	
	JMW0880	LORNG_JMW0880_05182022	FA95834-6	5/18/2022	WG	N	25	
	JMW0882	LORNG_JMW0882_05182022	FA95834-7	5/18/2022	WG	N	25	
	JMW0891	LORNG_JMW0891_05192022	FA95834-15	5/19/2022	WG	N	25	
	JMW1960	LORNG_JMW1960_05182022	FA95834-8	5/18/2022	WG	N	25	
	JMW3501	LORNG_JMW3501_05192022	FA95834-16	5/19/2022	WG	N	25	
	JPZ7704	LORNG_JPZ7704_05182022	FA95834-9	5/18/2022	WG	N	25	
	MMW0326	LORNG_MMW0326_05172022	FA95834-10	5/17/2022	WG	N	25	
	SB/OW17001	LORNG_OW17001_05172022	FA95834-11	5/17/2022	WG	N	25	
		LORNG_OW17001_05172022FD	FA95834-12	5/17/2022	WG	FD	25	
FA95870	AA07MW-01	LORNG_AA07MW01_05192022	FA95870-1	5/19/2022	WG	N	25	
	AA07MW-02	LORNG_AA07MW02_05192022	FA95870-2	5/19/2022	WG	N	25	
	CBW02	LORNG_CBW02_05192022	FA95870-7	5/19/2022	WG	N	25	
	FIELDQC	LORNG_EB010_05192022	FA95870-8	5/19/2022	WQ	EB	25	
		LORNG_EB011_05192022	FA95870-9	5/19/2022	WQ	EB	25	
	JMW-0602	LORNG_JMW0602_05192022	FA95870-10	5/19/2022	WG	N	25	
	JMW1565	LORNG_JMW1565_05192022	FA95870-3	5/19/2022	WG	N	25	
	LF2MW1	LORNG_LF2MW1_05192022	FA95870-4	5/19/2022	WG	N	25	
		LORNG_LF2MW1_05192022FD	FA95870-5	5/19/2022	WG	FD	25	
	LF2MW2	LORNG_LF2MW2_05192022	FA95870-6	5/19/2022	WG	N	25	
	LF2MW3	LORNG_LF2MW3_05192022	FA95870-11	5/19/2022	WG	N	25	
	MMW0002	LORNG_MMW0002_05202022	FA95870-12	5/20/2022	WG	N	25	
	UNK-044	LORNG-UNK-044_05192022	FA95870-14	5/19/2022	WG	N	25	
	USGS2	LORNG_USGS-2_125_05192022	FA95870-15	5/19/2022	WG	N	25	

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Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
FA95870	USGS2	LORNG_USGS-2_40_05192022	FA95870-13	5/19/2022	WG	N	25	
FA95898	AA18MW-01	LORNG_AA18MW01_05222022	FA95898-26	5/22/2022	WG	N	25	
	AA18MW-02	LORNG_AA18MW02_05222022	FA95898-27	5/22/2022	WG	N	25	
	ASMW101	LORNG_ASMW101_05222022	FA95898-28	5/22/2022	WG	N	25	
	BW01005	LORNG_BW01005_05222022	FA95898-29	5/22/2022	WG	N	25	
		LORNG_BW01005_05222022FD	FA95898-30	5/22/2022	WG	FD	25	
	BW05006	LORNG_BW05006_05212022	FA95898-14	5/21/2022	WG	N	25	
	FIELDQC	LORNG_EB012_05202022	FA95898-1	5/20/2022	WQ	EB	25	
		LORNG_EB013_05202022	FA95898-11	5/20/2022	WQ	EB	25	
		LORNG_EB014_05202022	FA95898-15	5/20/2022	WQ	EB	25	
		LORNG_EB015_05212022	FA95898-16	5/21/2022	WQ	EB	25	
		LORNG_EB016_05212022	FA95898-17	5/21/2022	WQ	EB	25	
		LORNG_EB017_05222022	FA95898-38	5/22/2022	WQ	EB	25	
		LORNG_EB018_05222022	FA95898-39	5/22/2022	WQ	EB	25	
		LORNG_EB019_05222022	FA95898-40	5/22/2022	WQ	EB	25	
	FMW3410	LORNG_FMW3410_05222022	FA95898-31	5/22/2022	WG	N	25	
	FMW3413	LORNG_FMW3413_05222022	FA95898-32	5/22/2022	WG	N	25	
	JBW7215B	LORNG_JBW7215B_05222022	FA95898-33	5/22/2022	WG	N	25	
	JBW7316	LORNG_JBW7316_05222022	FA95898-34	5/22/2022	WG	N	25	
	JBW8009	LORNG_JBW8009_05212022	FA95898-18	5/21/2022	WG	N	25	
	JMW0682	LORNG_JMW0682_05202022	FA95898-2	5/20/2022	WG	N	25	
	JMW0683	LORNG_JMW0683_05202022	FA95898-3	5/20/2022	WG	N	25	
	JMW0941	LORNG_JMW0941_05202022	FA95898-4	5/20/2022	WG	N	25	
	JMW0961	LORNG_JMW0961_05212022	FA95898-19	5/21/2022	WG	N	25	
	JMW0980	LORNG_JMW0980_05202022	FA95898-5	5/20/2022	WG	N	25	
	JMW0982	LORNG_JMW0982_05202022	FA95898-6	5/20/2022	WG	N	25	
	JMW0991	LORNG_JMW0991_05212022	FA95898-20	5/21/2022	WG	N	25	
	JMW0992	LORNG_JMW0992_05212022	FA95898-21	5/21/2022	WG	N	25	
	JMW7913	LORNG_JMW7913_05202022	FA95898-12	5/20/2022	WG	N	25	
	JMW7916	LORNG_JMW7916_05212022	FA95898-22	5/21/2022	WG	N	25	
	LF3MW3	LORNG_LF3MW3_05202022	FA95898-7	5/20/2022	WG	N	25	
	LF3MW4	LORNG_LF3MW4_05202022	FA95898-8	5/20/2022	WG	N	25	
	MMW0015	LORNG_MMW0015_05202022	FA95898-9	5/20/2022	WG	N	25	

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS	
						Analysis Method	M537	MS014.0
						Fraction	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount
FA95898	MMW0018B	LORNG_MMW0018B_05212022	FA95898-23	5/21/2022	WG	N	25	
	MMW3402R	LORNG_MMW3402R_05212022	FA95898-24	5/21/2022	WG	N	25	
	OW22001	LORNG_OW22001_05202022	FA95898-13	5/20/2022	WG	N	25	
	RFW1144	LORNG_RFW1144_05212022	FA95898-35	5/21/2022	WG	N	25	
	RFW-38	LORNG_RFW-38_05212022	FA95898-25	5/21/2022	WG	N	25	
FA95898	SB/OW16001	LORNG_OW16001_05202022	FA95898-10	5/20/2022	WG	N	25	
	UNK-033	LORNG-UNK-033_05222022	FA95898-36	5/22/2022	WG	N	25	
		LORNG-UNK-033_05222022FD	FA95898-37	5/22/2022	WG	FD	25	
FA95936	044-RW01	LORNG_044-RW01_05232022	FA95936-1	5/23/2022	WG	N	25	
	BW05007	LORNG_BW05007_05232022	FA95936-2	5/23/2022	WG	N	25	
		LORNG_BW05007_05232022FD	FA95936-3	5/23/2022	WG	FD	25	
	FIELDQC	LORNG_EB020_05232022	FA95936-9	5/23/2022	WQ	EB	25	
	JBW7314	LORNG_JBW7314_05232022	FA95936-4	5/23/2022	WG	N	25	
	JBW8003B	LORNG_JBW8003B_05232022	FA95936-10	5/23/2022	WG	N	25	
	JBW8004B	LORNG_JMW8004B_05232022	FA95936-5	5/23/2022	WG	N	25	
	JMW8011	LORNG_JMW8011_05232022	FA95936-6	5/23/2022	WG	N	25	
	JPZ1382	LORNG_JPZ1382_05232022	FA95936-7	5/23/2022	WG	N	25	
	MMW8015	LORNG_MMW8015_05232022	FA95936-8	5/23/2022	WG	N	25	
FA95976	WWTP_WSW	LORNG_WWTP_WSW_05242022	FA95976-1	5/24/2022	WP	N	25	
FA96108	FIELDQC	LORNG_FB05_06012022	FA96108-1	6/1/2022	WQ	AB	25	

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

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Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

						Method Class	VOCs		SVOCs by SIM		SVOCs	PCBs	Pesticides
						Analysis Method	SW8011	SW8260C	BNASIMC	BNASIMD	SW8270D	SW8082A	SW8081B
						Fraction	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
200-63331	JBW7737B	LORNG_JBW7737B_05062022_E	200-63331-1	5/6/2022	WG	N							
	SB/OW12001	LORNG_OW12001_05062022_E	200-63331-2	5/6/2022	WG	N							
200-63332	JBW7339B	LORNG_JBW7339B_05052022_E	200-63332-1	5/5/2022	WG	N							
200-63422	MMW0124	LORNG_MMW0124_05102022_E	200-63422-1	5/10/2022	WG	N							
		LORNG_MMW0124_05102022FD_E	200-63422-2FD	5/10/2022	WG	FD							
200-63423	JBW7338B	LORNG_JBW7338B_05092022_E	200-63423-2	5/9/2022	WG	N							
	OW21005	LORNG_OW21005_05092022_E	200-63423-1	5/9/2022	WG	N							
200-63531	BW06005	LORNG_BW06005_05182022_E	200-63531-1	5/18/2022	WG	N							
200-63533	SB/OW16001	LORNG_OW16001_05202022_E	200-63533-1	5/20/2022	WG	N							
200-63534	BW05007	LORNG_BW05007_05232022_E	200-63534-1	5/23/2022	WG	N							
		LORNG_BW05007_05232022FD_E	200-63534-2FD	5/23/2022	WG	FD							
	JMW8011	LORNG_JMW8011_05232022_E	200-63534-3	5/23/2022	WG	N							
SP2142	FIELDQC	LORNG_TB01_05052022	SP2142-2	5/5/2022	WQ	TB		72					
	JBW7339B	LORNG_JBW7339B_05052022_K	SP2142-1	5/5/2022	WG	N	2	72		19	56		
SP2161	FIELDQC	LORNG_TB02_05052022	SP2161-2	5/5/2022	WQ	TB		72					
	JBW7348	LORNG_JBW7348_05052022_K	SP2161-1	5/5/2022	WG	N	2			19	56		
			SP2161-1	5/5/2022	WG	N		72					
SP2189	FIELDQC	LORNG_TB03_05062022	SP2189-6	5/6/2022	WQ	TB		72					
	JBW7737B	LORNG_JBW7737B_05062022_K	SP2189-3	5/6/2022	WG	N	2	72					
		LORNG_JBW7737B_05062022FD_K	SP2189-4	5/6/2022	WG	FD	2	72					
	JMW0445	LORNG_JMW0445_05082022_K	SP2189-1	5/8/2022	WG	N	2	72		18	56		
		LORNG_JMW0445_05082022F	SP2189-2	5/8/2022	WG	N							
	SB/OW12001	LORNG_OW12001_05062022_K	SP2189-5	5/6/2022	WG	N	2	72					
SP2222	FIELDQC	LORNG_TB04_05092022	SP2222-5	5/9/2022	WQ	TB		72					
	JBW7338B	LORNG_JBW7338B_05092022_K	SP2222-4	5/9/2022	WG	N	2	72		19	56		
		LORNG_JBW7338B_05092022F	SP2222-7	5/9/2022	WG	N							
	JBW7711	LORNG_JBW7711_05092022_K	SP2222-1	5/9/2022	WG	N	2	72		18	56		
		LORNG_JBW7711_05092022F	SP2222-6	5/9/2022	WG	N							
	JPZ0349	LORNG_JPZ0349_05092022_K	SP2222-2	5/9/2022	WG	N	2	72		18	56	10	
	OW21005	LORNG_OW21005_05092022_K	SP2222-3	5/9/2022	WG	N	2	72		18	56	10	
SP2277	MMW0124	LORNG_MMW0124_05102022_K	SP2277-1	5/10/2022	WG	N			1				
		LORNG_MMW0124_05102022FD_K	SP2277-2	5/10/2022	WG	FD			1				

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Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	VOCs		SVOCs by SIM		SVOCs	PCBs	Pesticides
						Analysis Method	SW8011	SW8260C	BNASIMC	BNASIMD	SW8270D	SW8082A	SW8081B
						Fraction	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP2481	FIELDQC	LORNG_TB07_05202022	SP2481-3	5/20/2022	WQ	TB	2	72					
	JMW0683	LORNG_JMW0683_05202022_K	SP2481-1	5/20/2022	WG	N	2	72					
			SP2481-1	5/20/2022	WG	N				18	56		
	SB/OW16001	LORNG_OW16001_05202022_K	SP2481-2	5/20/2022	WG	N	2	72		18	56		
WOOD-LORING-1	AA07MW-01	LORNG_AA07MW01_05192022_K	SP2462-1	5/19/2022	WG	N	2	72		19	56		
			SP2462-1	5/19/2022	WG	N							
	BW06005	LORNG_BW06005_05182022_K	SP2463-1	5/18/2022	WG	N	2	72		19	56		
			SP2463-1	5/18/2022	WG	N							
	FIELDQC	LORNG_TB06_05192022	SP2463-4	5/19/2022	WQ	TB	2	72					
	SB/OW17001	LORNG_OW17001_05172022_K	SP2463-2	5/17/2022	WG	N							
			SP2463-2	5/17/2022	WG	N							
		LORNG_OW17001_05172022FD_K	SP2463-3	5/17/2022	WG	FD							
			SP2463-3	5/17/2022	WG	FD							
WOOD-LORING-2	BW05007	LORNG_BW05007_05232022_K	SP2523-1	5/23/2022	WG	N	2	72		18	56	10	21
			SP2523-1	5/23/2022	WG	N							
		LORNG_BW05007_05232022FD_K	SP2523-2	5/23/2022	WG	FD	2	72		18	56	10	21
			SP2523-2	5/23/2022	WG	FD							
	FIELDQC	LORNG_TB08_05232022	SP2523-4	5/23/2022	WQ	TB	2	72					
	JMW8011	LORNG_JMW8011_05232022_K	SP2523-3	5/23/2022	WG	N				1			
	MMW3402R	LORNG_MMW3402R_05212022_K	SP2521-1	5/21/2022	WG	N	2	72		18	56		
			SP2521-1	5/21/2022	WG	N							

Notes:

N = Total; D = Dissolved

N = Normal Field Sample, FD = Field Duplicate, TB =Trip Blank

WG = Groundwater, WQ = Water Quality Control

ParamCount = Number of target analytes reported

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Date:10/6/22
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Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	Metals						Perchlorate
						Analysis Method	SW6010C		SW6020A		SW7470A		SW6850
						Fraction	D	T	D	T	D	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
200-63331	JBW7737B	LORNG_JBW7737B_05062022_E	200-63331-1	5/6/2022	WG	N							1
	SB/OW12001	LORNG_OW12001_05062022_E	200-63331-2	5/6/2022	WG	N							1
200-63332	JBW7339B	LORNG_JBW7339B_05052022_E	200-63332-1	5/5/2022	WG	N							1
200-63422	MMW0124	LORNG_MMW0124_05102022_E	200-63422-1	5/10/2022	WG	N							1
		LORNG_MMW0124_05102022FD_E	200-63422-2FD	5/10/2022	WG	FD							1
200-63423	JBW7338B	LORNG_JBW7338B_05092022_E	200-63423-2	5/9/2022	WG	N							1
	OW21005	LORNG_OW21005_05092022_E	200-63423-1	5/9/2022	WG	N							1
200-63531	BW06005	LORNG_BW06005_05182022_E	200-63531-1	5/18/2022	WG	N							1
200-63533	SB/OW16001	LORNG_OW16001_05202022_E	200-63533-1	5/20/2022	WG	N							1
200-63534	BW05007	LORNG_BW05007_05232022_E	200-63534-1	5/23/2022	WG	N							1
		LORNG_BW05007_05232022FD_E	200-63534-2FD	5/23/2022	WG	FD							1
	JMW8011	LORNG_JMW8011_05232022_E	200-63534-3	5/23/2022	WG	N							1
SP2142	FIELDQC	LORNG_TB01_05052022	SP2142-2	5/5/2022	WQ	TB							
	JBW7339B	LORNG_JBW7339B_05052022_K	SP2142-1	5/5/2022	WG	N		16		6		1	
SP2161	FIELDQC	LORNG_TB02_05052022	SP2161-2	5/5/2022	WQ	TB							
	JBW7348	LORNG_JBW7348_05052022_K	SP2161-1	5/5/2022	WG	N		16		6		1	
			SP2161-1	5/5/2022	WG	N							
SP2189	FIELDQC	LORNG_TB03_05062022	SP2189-6	5/6/2022	WQ	TB							
	JBW7737B	LORNG_JBW7737B_05062022_K	SP2189-3	5/6/2022	WG	N							
		LORNG_JBW7737B_05062022FD_K	SP2189-4	5/6/2022	WG	FD							
	JMW0445	LORNG_JMW0445_05082022_K	SP2189-1	5/8/2022	WG	N		16		6		1	
		LORNG_JMW0445_05082022F	SP2189-2	5/8/2022	WG	N	16		6		1		
	SB/OW12001	LORNG_OW12001_05062022_K	SP2189-5	5/6/2022	WG	N							
SP2222	FIELDQC	LORNG_TB04_05092022	SP2222-5	5/9/2022	WQ	TB							
	JBW7338B	LORNG_JBW7338B_05092022_K	SP2222-4	5/9/2022	WG	N		16		6		1	
		LORNG_JBW7338B_05092022F	SP2222-7	5/9/2022	WG	N	16		6		1		
	JBW7711	LORNG_JBW7711_05092022_K	SP2222-1	5/9/2022	WG	N		16		6		1	
		LORNG_JBW7711_05092022F	SP2222-6	5/9/2022	WG	N	16		6		1		
	JPZ0349	LORNG_JPZ0349_05092022_K	SP2222-2	5/9/2022	WG	N		16		6		1	
	OW21005	LORNG_OW21005_05092022_K	SP2222-3	5/9/2022	WG	N		16		6		1	
SP2277	MMW0124	LORNG_MMW0124_05102022_K	SP2277-1	5/10/2022	WG	N							
		LORNG_MMW0124_05102022FD_K	SP2277-2	5/10/2022	WG	FD							

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Table 1 - Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	Metals						Perchlorate
						Analysis Method	SW6010C		SW6020A		SW7470A		SW6850
						Fraction	D	T	D	T	D	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
SP2481	FIELDQC	LORNG_TB07_05202022	SP2481-3	5/20/2022	WQ	TB							
	JMW0683	LORNG_JMW0683_05202022_K	SP2481-1	5/20/2022	WG	N		16		6		1	
			SP2481-1	5/20/2022	WG	N							
	SB/OW16001	LORNG_OW16001_05202022_K	SP2481-2	5/20/2022	WG	N		16		6		1	
WOOD-LORING-1	AA07MW-01	LORNG_AA07MW01_05192022_K	SP2462-1	5/19/2022	WG	N						1	
			SP2462-1	5/19/2022	WG	N		16		6			
	BW06005	LORNG_BW06005_05182022_K	SP2463-1	5/18/2022	WG	N						1	
			SP2463-1	5/18/2022	WG	N		16		6			
	FIELDQC	LORNG_TB06_05192022	SP2463-4	5/19/2022	WQ	TB							
	SB/OW17001	LORNG_OW17001_05172022_K	SP2463-2	5/17/2022	WG	N						1	
			SP2463-2	5/17/2022	WG	N		16		6			
		LORNG_OW17001_05172022FD_K	SP2463-3	5/17/2022	WG	FD						1	
			SP2463-3	5/17/2022	WG	FD		16		6			
WOOD-LORING-2	BW05007	LORNG_BW05007_05232022_K	SP2523-1	5/23/2022	WG	N						1	
			SP2523-1	5/23/2022	WG	N		16		6			
		LORNG_BW05007_05232022FD_K	SP2523-2	5/23/2022	WG	FD						1	
			SP2523-2	5/23/2022	WG	FD		16		6			
	FIELDQC	LORNG_TB08_05232022	SP2523-4	5/23/2022	WQ	TB							
	JMW8011	LORNG_JMW8011_05232022_K	SP2523-3	5/23/2022	WG	N							
	MMW3402R	LORNG_MMW3402R_05212022_K	SP2521-1	5/21/2022	WG	N						1	
			SP2521-1	5/21/2022	WG	N		16		6			

Notes:

N = Total; D = Dissolved

N = Normal Field Sample, FD = Field Duplicate, TB =Trip Blank

WG = Groundwater, WQ = Water Quality Control

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/6/22

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

			SDG	FA95439		FA95440														FA95511	
			Location	LISOURCE		JBW7339B		JBW7341B		JBW7350		JMW-0505				JPZ0342		FIELDQC			
			Sample Date	5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022				5/5/2022		5/5/2022			
			Sample ID	LORING_LISOURCE_05052022		LORNG_JBW7339B_05052022		LORNG_JBW7341B_05052022		LORNG_JBW7350_05052022		LORNG_JMW0505_05052022		LORNG_JMW0505_05052022FD		LORNG_JPZ0342_05052022		LORNG_EB001_05052022			
			QC Code	N		N		N		N		N		FD		N		EB			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.8	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U	1.9	J	1.7	U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.8	U	72.2		1.9	U	1.7	U	1.7	U	1.7	U	102		1.7	U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.8	U	5.3	J	1.9	U	1.7	U	1.7	U	1.7	U	3.4	J	1.7	U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.8	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	1.8	U	1.9	U	1.9	U	1.7	U	8.6	UJ	1.7	U	1.7	U	1.7	U		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.8	U	3.8	U	1.9	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.89	U	14.3		4.5		3.2	J	1.3	J	1.3	J	18.8		0.86	U		
		Perfluorobutanoic acid (PFBA)	NG/L	1.8	U	26		12.4		7		11		11.1		28.6		1.7	U		
		Perfluorodecane sulfonate (PFDS)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluorodecanoic acid (PFDA)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.89	U	10.9		3.5	J	0.86	U	0.86	U	0.86	U	11.1		0.86	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.89	U	40.9		14.4		8.3		9		9.1		39.2		0.86	U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.89	U	418		198		31.8		17.6		17.7		353		0.86	U		
		Perfluorohexanoic acid (PFHxA)	NG/L	0.89	U	99.7		37.9		14.7		16.2		16.5		105		0.86	U		
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluorononanoic acid (PFNA)	NG/L	0.89	U	5		2.1	J	0.86	U	0.86	U	0.86	U	4		0.86	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.2	J	11.4	J	8.1		0.86	U	0.86	U	0.86	U	7.6		0.86	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.6	J	311		130		17.8		12.8		14.5		297		0.86	U		
		Perfluorooctanoic acid (PFOA)	NG/L	0.89	U	124		46.1		8.9		8.4		8.6		128		0.86	U		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.89	U	21.8		6.6		4.7		1.7	J	1.6	J	27.4		0.86	U		
		Perfluoropentanoic acid (PFPeA)	NG/L	0.89	U	84		27.4		16.8		22.7		23.2		102		0.86	U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.89	U	0.94	U	0.94	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U		

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95511													
		Location		JBW7335A		JBW7335B		JBW7336A		JBW7339A		JBW7347B		JBW7348		JEBS-4	
		Sample Date		5/6/2022		5/6/2022		5/5/2022		5/5/2022		5/6/2022		5/5/2022		5/5/2022	
		Sample ID		LORNG_JBW7335A_05062022		LORNG_JBW7335B_05062022		LORNG_JBW7336A_05052022	LORNG_JBW7336A_05052022FD	LORNG_JBW7339A_05052022		LORNG_JBW7347B_05062022		LORNG_JBW7348_05052022		LORNG_JEBS-4_05052022	
		QC Code		N		N		N	FD	N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.7	U	1.7	U	1.7	U	1.9	U	1.9	U	1.7	U	1.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	18.1		1.7	U	1.7	U	61		2.1	J	1.7	U	1.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.7	U	1.7	U	1.7	U	1.9	U	1.9	U	1.7	U	1.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.7	U	1.7	U	1.7	U	1.9	U	1.9	U	1.7	U	1.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	8.6	U	8.6	UJ	8.6	UJ	8.6	UJ	1.9	U	1.9	U	8.6	U	8.6	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.9	U	1.7	U	1.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	J	0.86	U	1.8	J	1.7	J	14.1		0.93	U	1.6	J	0.86	U
		Perfluorobutanoic acid (PFBA)	NG/L	7.4		8.1		7.2		7.2		24.2		3.1	J	4.6	J	1.7	U
		Perfluorodecane sulfonate (PFDS)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.86	U	0.86	U	1.2	J	1.4	J	7.2		0.93	U	0.86	U	0.86	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	7.7		6.5		5.2		5.2		30		1.3	J	4.8		1.3	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	30.4		30.2		32.8		32.9		305		11.3		23.2		7.5	
		Perfluorohexanoic acid (PFHxA)	NG/L	10.4		8.7		8.4		8.4		90.9		2.4	J	7.9		1.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluorononanoic acid (PFNA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	2.6	J	0.93	U	0.86	U	0.86	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	8.8		0.93	U	0.86	U	0.86	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	28.2		25.5		38.5		39.1		208		8.8		20.4		12.7	
		Perfluorooctanoic acid (PFOA)	NG/L	8.6		7.7		7.1		7		100		2.4	J	5.8		3	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.9	J	3.4		2.6	J	2.7	J	19.7		0.97	J	2.3	J	0.86	U
		Perfluoropentanoic acid (PFPeA)	NG/L	14.5		11.8		11.1		11		81.4		2	J	7.2		1.2	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.86	U	0.86	U	0.86	U	0.86	U	0.93	U	0.93	U	0.86	U	0.86	U

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95511					FA95583		
		Location		JMW0301C	JMW1665	JMW1684	JMW1762	JPZ1780	AA11MW-01		AA11MW-02
		Sample Date		5/5/2022	5/5/2022	5/5/2022	5/5/2022	5/6/2022	5/7/2022		5/7/2022
		Sample ID		LORNG_JMW0301C_05052022	LORNG_JMW1665_05052022	LORNG_JMW1684_05052022	LORNG_JMW1762_05052022	LORNG_JPZ1780_05062022	LORNG_AA11MW01_05072022	LORNG_AA11MW01_05072022FD	LORNG_AA11MW02_05072022
		QC Code		N	N	N	N	N	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.6 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	8.6 U	1.7 U	8.6 U	8.6 U	8.6 U	8.6 R	8.6 UJ	1.7 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.9	2.6 J	5.2	1.5 J	2.2 J	2.4 J	2.5 J	7.2
		Perfluorobutanoic acid (PFBA)	NG/L	9.5	8.9	7.7	3.7 J	5.3 J	3 J	3.2 J	8.4
		Perfluorodecane sulfonate (PFDS)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3 J	1 J	1.2 J	0.86 U	0.95 J	1.8 J	1.6 J	5.1
		Perfluoroheptanoic acid (PFHpA)	NG/L	13.6	9.3	8.3	2.6 J	6.1	2.9 J	3.1 J	10.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	198	30.9	45.1	19.7	59.1	28.2	30.1	85.1
		Perfluorohexanoic acid (PFHxA)	NG/L	37.3	14.2	14.4	4.2	11.8	6.3	6.6	20
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluorononanoic acid (PFNA)	NG/L	1.3 J	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	4.3	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	107	35.5	34.8	14.4	32.6	58.2	57	206
		Perfluorooctanoic acid (PFOA)	NG/L	38.5	9	7.9	3.2 J	9.8	3.7	3.7	13.6
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	7.4	3.5	7.2	2.3 J	3.2 J	3.6	3.6	9.8
		Perfluoropentanoic acid (PFPeA)	NG/L	25.7	17.4	13.5	5.5	10.4	4.8	5	17
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	4.3 U	4.3 U	0.86 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95583									
		Location	BW10006	BW12005	BW14005	FIELDQC			JBW7345B	JBW7614		
		Sample Date	5/6/2022	5/6/2022	5/7/2022	5/6/2022		5/8/2022	5/6/2022	5/8/2022		
		Sample ID	LORNG_BW10006_05062022	LORNG_BW12005_05062022	LORNG_BW14005_05072022	LORNG_EB002_05062022	LORNG_EB003_05062022	LORNG_EB004_05082022	LORNG_JBW7345B_05062022	LORNG_JBW7614_05082022		
		QC Code	N	N	N	EB	EB	EB	N	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.8 U	6.1 J	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.8 U	173	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.8 U	37.7	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.8 U	1.8 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	1.8 U	1.8 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.8 U	1.8 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.6 J	125	2.9 J	0.86 U	0.86 U	0.86 U	2.4 J	0.86 U	
		Perfluorobutanoic acid (PFBA)	NG/L	3.4 J	56.3	4.1 J	1.7 U	1.7 U	1.7 U	4.8 J	1.7 U	
		Perfluorodecane sulfonate (PFDS)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorodecanoic acid (PFDA)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.89 U	94.7	1.6 J	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.2 J	53	3.8	0.86 U	0.86 U	0.86 U	5.2	0.86 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	25	755	48.7	0.86 U	0.86 U	0.86 U	25.2	1.5 J	
		Perfluorohexanoic acid (PFHxA)	NG/L	4.7	294	9.5	0.86 U	0.86 U	0.86 U	8.4	0.86 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.89 U	7.8	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorononanoic acid (PFNA)	NG/L	0.89 U	2.3 J	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.89 U	8.6	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	21.4	3,570	45.3	0.86 U	0.86 U	0.86 U	22	2.9 J	
		Perfluorooctanoic acid (PFOA)	NG/L	5.6	105	11.7	0.86 U	0.86 U	0.86 U	5.8	1.2 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.3 J	144	4.2	0.86 U	0.86 U	0.86 U	3.1 J	0.86 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	3.8	123	6.2	0.86 U	0.86 U	0.86 U	8	1.2 J	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.89 U	0.89 U	0.89 U	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U	

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95583													
		Location	JBW7714		JBW7734		JBW7737A		JBW7737B			JBW7738A		JBW7738B		JBW7752	
		Sample Date	5/8/2022		5/7/2022		5/6/2022		5/6/2022			5/8/2022		5/7/2022		5/7/2022	
		Sample ID	LORNG_JBW7714_05082022		LORNG_JBW7734_05072022		LORNG_JBW7737A_05062022		LORNG_JBW7737B_05062022		LORNG_JBW7737B_05062022FD	LORNG_JBW7738A_05082022		LORNG_JBW7738B_05072022		LORNG_JBW7752_05072022	
		QC Code	N		N		N		N		FD	N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	7.9	J	1.8	U	2.7	J	1.7	U	1.8	U	2.1	J	1.7	U	2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	4.6	J	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2	U	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1	U	3.4	J	17.9		4.3		4.3		11.2		22.2		1	U
		Perfluorobutanoic acid (PFBA)	NG/L	8.6		6.1	J	11.1		7.3		7.3		7.2		12.1		2	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	U	2.5	J	8.4		3.5		3.6		4.3		8.7		1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.3		6.9		10.6		9.3		9.3		6.7		12.4		1	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	9.7		54.5		102		53.3		53.3		65.7		120		2.9	J
		Perfluorohexanoic acid (PFHxA)	NG/L	7.9		9.6		38.8		14		13.9		22.8		43.3		1.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluorononanoic acid (PFNA)	NG/L	1.3	J	0.89	U	0.9	J	1.6	J	1.6	J	0.86	U	0.86	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U	0.89	U	0.86	U	0.86	J	0.9	J	0.86	U	0.93	J	1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	18.8		79.1		284		181		185		119		224		3.1	J
		Perfluorooctanoic acid (PFOA)	NG/L	9.2		8		15.1		12.3		12.1		9.7		17.2		1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	U	5		20.3		6.8		5.9		12.3		24.2		1	U
		Perfluoropentanoic acid (PFPeA)	NG/L	12.3		8.8		26.1		13.8		13.7		16.6		29.9		1.8	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	0.89	U	0.86	U	0.86	U	0.89	U	0.86	U	0.86	U	1	U

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95583							
		Location		JMW-0241A	JMW-0406	JMW-0416B	JMW0445	JMW1981	JMW1982	JMW6001	
		Sample Date		5/6/2022	5/6/2022	5/7/2022	5/8/2022	5/8/2022	5/8/2022	5/6/2022	
		Sample ID		LORNG_JMW0241A_05062022	LORNG_JMW0406_05062022	LORNG_JMW0416B_05072022	LORNG_JMW0445_05082022	LORNG_JMW1981_05082022	LORNG_JMW1982_05082022	LORNG_JMW6001_05062022	LORNG_JMW6001_05062022FD
		QC Code		N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	2 U	2 U	1.7 U	1.7 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.7 U	1.7 U	1.7 U	1.8 J	2 U	8.6	1.7 U	1.7 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	2 U	6.7 J	1.7 U	1.7 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	2 U	2 U	1.7 U	1.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	8.6 UJ	1.7 U	1.7 U	8.6 U	2 U	2 U	8.6 UJ	8.6 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.7 U	1.7 U	1.7 U	1.7 U	2 U	2 U	1.7 U	1.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.86 U	1.4 J	1.4 J	1.9 J	2.7 J	15.5	0.86 U	0.86 U
		Perfluorobutanoic acid (PFBA)	NG/L	1.7 U	10.3	6.4 J	14.1	4.7 J	11.9	3.1 J	3.3 J
		Perfluorodecane sulfonate (PFDS)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.86 U	1.9 J	0.86 U	0.86 U	1.1 J	23.9	0.86 U	0.86 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.86 U	11.5	2.6 J	3.4	4.9	21.2	0.86 U	0.86 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1 J	41.5	19.4	22.9	22.8	475	4.3	4.5
		Perfluorohexanoic acid (PFHxA)	NG/L	0.86 U	14.5	9	6	8.4	96.7	1 J	1.2 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluorononanoic acid (PFNA)	NG/L	0.86 U	4.5	0.86 U	0.86 U	1 U	4.1	0.86 U	0.86 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	14	0.86 U	0.86 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.86 U	114	8.8	21.8	37.7	1,260	6	6.3
		Perfluorooctanoic acid (PFOA)	NG/L	0.86 U	14.3	4.9	6.5	6.9	159	0.86 U	0.86 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.86 U	2.4 J	1.7 J	1.9 J	3.2 J	19.2	0.86 U	0.86 U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.86 U	20.9	19.5	4.9	11.4	30	1.1 J	1.4 J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.86 U	0.86 U	0.86 U	0.86 U	1 U	1 U	0.86 U	0.86 U

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95583							
		Location		JPZ7808	MMW0009	MMW0330	MMW0422	MMW0423	OW10005	OW14004	SB/OW12001
		Sample Date		5/6/2022	5/6/2022	5/7/2022	5/7/2022	5/7/2022	5/6/2022	5/7/2022	5/6/2022
		Sample ID		LORNG_JPZ7808_05062022	LORNG_MMW0009_05062022	LORNG_MMW0330_05072022	LORNG_MMW0422_05072022	LORNG_MMW0423_05072022	LORNG_OW10005_05062022	LORNG_OW14004_05072022	LORNG_OW12001_05062022
		QC Code		N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.7 U	1.7 U	2 U	2 U	2 U	1.7 U	1.8 U	4.8 J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.7 U	1.7 U	3.7 J	2 U	2 U	1.7 U	2 J	168
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.7 U	1.7 U	2 U	2 U	2 U	1.7 U	1.8 U	20.5
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.7 U	1.7 U	2 U	2 U	2 U	1.7 U	1.8 U	1.7 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	1.7 U	1.7 U	2 U	2 U	2 U	1.7 U	1.8 U	34 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.7 U	1.7 U	2 U	2 U	2 U	1.7 U	1.8 U	1.7 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.86 U	0.86 U	3.8 J	1 J	1.2 J	1.5 J	5.1	99.6
		Perfluorobutanoic acid (PFBA)	NG/L	1.7 U	1.7 U	5.5 J	2 U	2 U	6.6 J	9.9	42.9
		Perfluorodecane sulfonate (PFDS)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.86 U	0.86 U	2.9 J	1 U	1 U	0.86 U	0.89 U	107
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.86 U	0.86 U	7.3	1.1 J	1.2 J	4.3	12.8	51.3
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.3 J	11.8	62.3	10.8	13.5	17.5	78.4	714
		Perfluorohexanoic acid (PFHxA)	NG/L	0.86 U	0.86 U	10.4	1.3 J	1.7 J	6.4	20.6	236
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	4.8
		Perfluorononanoic acid (PFNA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.87 J	0.89 U	3.1 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	3.1 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.86 U	2.7 J	99.4	6.1	8.6	23.6	5	3,660
		Perfluorooctanoic acid (PFOA)	NG/L	0.86 U	1.8 J	9.5	2.4 J	3.1 J	5.9	39.2	105
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.86 U	0.86 U	5.4	1 U	1.3 J	3.5	5.2	124
		Perfluoropentanoic acid (PFPeA)	NG/L	0.86 U	0.86 U	9	1.3 J	1.8 J	7.4	19.4	105
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.86 U	0.86 U	1 U	1 U	1 U	0.86 U	0.89 U	0.86 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95583	FA95595						
		Location	SB/OW12001	FIELDQC	JBW7338B	JBW7710B	JBW7711	JBW7753A	JMW0681	JMW3102
		Sample Date	5/6/2022	5/9/2022	5/9/2022	5/9/2022	5/9/2022	5/9/2022	5/9/2022	5/9/2022
		Sample ID	LORNG_OW12001_05062022FD	LORNG_EB005_05092022	LORNG_JBW7338B_05092022	LORNG_JBW7710B_05092022	LORNG_JBW7711_05092022	LORNG_JBW7753A_05092022	LORNG_JMW0681_05092022	LORNG_JMW3102_05092022
		QC Code	FD	EB	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	5.2 J	1.7 U	2 U	1.7 U	1.7 U	2 U	2 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	184	1.7 U	2 U	7.4	1.7 U	2 U	2 U	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	22.8	1.7 U	2 U	1.7 U	1.7 U	2 U	2 U	2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.7 U	1.7 U	2 U	1.7 U	1.7 U	2 U	2 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	34 U	1.7 U	10 U	1.7 U	1.7 U	2 U	2 U	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.7 U	1.7 U	2 U	1.7 U	1.7 U	2 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	109	0.86 U	3.1 J	3 J	2.4 J	3.5 J	1.7 J	1.2 J
		Perfluorobutanoic acid (PFBA)	NG/L	46.8	1.7 U	7.8 J	7.6	3.8 J	5.6 J	3.9 J	20.2
		Perfluorodecane sulfonate (PFDS)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	123	0.86 U	1 U	1.6 J	2.1 J	3.4 J	1 U	1 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	56.2	0.86 U	6.2	5.9	2.9 J	9	1.8 J	1.8 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	704	0.86 U	30.2	47.7	65.8	50.3	12.9	1 U
		Perfluorohexanoic acid (PFHxA)	NG/L	260	0.86 U	10.2	12.3	8.3	8.9	4.5	30.1
		Perfluorononanesulfonic acid (PFNS)	NG/L	5.2	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	3.5	0.86 U	1 U	0.86 U	0.86 U	1.5 J	1 U	1 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	3.1 J	0.86 U	1 U	0.86 U	1.4 J	1.3 J	1 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4,350	0.86 U	20.6	47.8	108	190	8.9	1 U
		Perfluorooctanoic acid (PFOA)	NG/L	116	0.86 U	7.8	11.5	10.9	11.9	2.8 J	2.6 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	136	0.86 U	3.7 J	4.3	3.4	5.1	1.8 J	1 U
		Perfluoropentanoic acid (PFPeA)	NG/L	116	0.86 U	10.5	13.3	3 J	7.2	4.9	49.6
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.86 U	0.86 U	1 U	0.86 U	0.86 U	1 U	1 U	1 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95595													
		Location	JPZ0348		JPZ0349		JPZ0606		JPZ0606		JPZ0686		MMW0007A		MMW0007B		OW21005	
		Sample Date	5/9/2022		5/9/2022		5/9/2022		5/9/2022		5/9/2022		5/9/2022		5/9/2022		5/9/2022	
		Sample ID	LORNG_JPZ0348_05092022		LORNG_JPZ0349_05092022		LORNG_JPZ0606_05092022		LORNG_JPZ0606_05092022FD		LORNG_JPZ0686_05092022		LORNG_MMW0007A_05092022		LORNG_MMW0007B_05092022		LORNG_OW21005_05092022	
		QC Code	N		N		N		FD		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	1.7	U	2	U	2	U	2	U	2	U	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	2.5	J	2.7	J	2	U	2	U	2	U	2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	1.7	U	2	U	2	U	2	U	2	U	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	1.7	U	2	U	2	U	2	U	2	U	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2	U	2	U	13.1	J	10	UJ	20	UJ	2	U	2	U	10	UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	1.7	U	2	U	2	U	2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.2	J	1	U	1.7	J	1.8	J	1	U	1	U	2.2	J	1	U
		Perfluorobutanoic acid (PFBA)	NG/L	6.4	J	2.6	J	12.4		12.5		2	U	2.9	J	5	J	2	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2	J	1	U	2	J	1.9	J	1	U	1	U	1	U	1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.3		2.5	J	4.1		4		1	U	2.3	J	5.9		1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	122		17.6		37.1		37.8		4.8		6.9		19.3		7.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	20.5		4.6		9.7		9.7		1	U	4.9		11.1		1.4	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U
		Perfluorononanoic acid (PFNA)	NG/L	1	J	1	U	1.9	J	1.9	J	1	U	1	U	1	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.8	J	1	U	4.3	UJ	1	U	1	U	1	U	1	U	1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	89.3		13.3		70.7		69.9		3.7	J	7.6		22.7		9.1	
		Perfluorooctanoic acid (PFOA)	NG/L	25.4		4.6		6.8		6.9		1.4	J	2.8	J	7.4		2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.4		1.2	J	3	J	3.1	J	1	U	1	U	2.2	J	1	U
		Perfluoropentanoic acid (PFPeA)	NG/L	15.8		5.5		7.6		8.2		1.2	J	6.5		13.7		1.1	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	4.3	UJ	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	0.86	U	1	U	1	U	1	U	1	U	1	U

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95621													
		Location	BSMW3S	FIELDQC		JBW7203B	JBW7304	JBW7326A	JBW7326B	JBW7912						
		Sample Date	5/10/2022	5/10/2022		5/10/2022	5/10/2022	5/10/2022	5/10/2022	5/10/2022						
		Sample ID	LORNG_BSMW3S_05102022	LORNG_EB006_05102022		LORNG_EB007_05102022	LORNG_JBW7203B_05102022	LORNG_JBW7304_05102022	LORNG_JBW7326A_05102022	LORNG_JBW7326B_05102022		LORNG_JBW7912_40_05102022				
		QC Code	N	EB		EB	N	N	N	N		N				
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U	4.6	J
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	10	U	2	U	1.8	U	2	U	2	U	2	U	10	UJ	2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	6.6		1	U	0.88	U	1.7	J	2.1	J	1.7	J	1.8	J	1.9	J
		Perfluorobutanoic acid (PFBA)	NG/L	13.1		2	U	1.8	U	5.2	J	6.4	J	4.7	J	4.3	J	9.5	
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	6.1		1	U	0.88	U	1	U	2.2	J	1	U	1	U	1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	25.2		1	U	0.88	U	5.3		5.7		3.5	J	3.2	J	10.9	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	202		1	U	0.88	U	20.5		27.5		24.4		23.2		25.2	
		Perfluorohexanoic acid (PFHxA)	NG/L	30.8		1	U	0.88	U	8.4		8.5		6		5.5		13.3	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluorononanoic acid (PFNA)	NG/L	7.7		1	U	0.88	U	1.2	J	1	U	1	U	1	U	1.2	J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	26.4		1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	362		1	U	0.88	U	27.5		117		22.5		23.5		44.8	
		Perfluorooctanoic acid (PFOA)	NG/L	50.8		1	U	0.88	U	5.8		5		4.5		4.5	J	9	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	9.9		1	U	0.88	U	2.3	J	2.8	J	2.7	J	2.5	J	2.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	25.7		1	U	0.88	U	10.8		14.5		7.3		6.5		20.5	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U	1	U

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95621													
		Location		JBW7912		JMW-0603		JMW3601		MMW0010		MMW0011		MMW0017		MMW0124	
		Sample Date		5/10/2022		5/10/2022		5/10/2022		5/10/2022		5/10/2022		5/10/2022		5/10/2022	
		Sample ID		LORNG_JBW7912_150_05102022		LORNG_JMW0603_05102022		LORNG_JMW3601_05102022		LORNG_MMW0010_05102022		LORNG_MMW0011_05102022		LORNG_MMW0017_05102022		LORNG_MMW0124_05102022	LORNG_MMW0124_05102022FD
		QC Code		N		N		N		N		N		N		N	FD
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	2	U	1.8	U	2	U	2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.2	J	1	U	1	U	3.4	J	3.5	J	3.4	J	1	U	1	U
		Perfluorobutanoic acid (PFBA)	NG/L	10.5		7.9	J	2.7	J	7.8		7.2	J	7	J	3.9	J	4.2	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.2	J	1	U	1	U	2	J	2	J	2.1	J	1	U	1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	11		1	U	1.9	J	11.6		10.1		10.1		3.1	J	3.3	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	27.1		4.9		5.2		53.9		50.8		54.7		7.4		8.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	12		1.6	J	3	J	17.9		16.9		16.9		4.7		4.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluorononanoic acid (PFNA)	NG/L	1.2	J	1	U	1	U	1.2	J	1	J	1.1	J	1	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	50.7		1.8	J	6.9		71.3		68.3		73.3		8.5		9.2	
		Perfluorooctanoic acid (PFOA)	NG/L	8.4		2.4	J	5.8		14.8		13.7		14.4		7.3		8	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.1	J	1	U	1	U	4.7		4.4		4.5		1	J	1	U
		Perfluoropentanoic acid (PFPeA)	NG/L	19.8		6.2		4.3		18.1		16.4		15.8		6.6		7.3	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	1	U	0.88	U	1	U	1	U	1	U	1	U

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95621		FA95783				FA95784	
		Location	RFW1147	USMW025	FIELDQC				043-MW03	AA20MW-01
		Sample Date	5/10/2022	5/10/2022	5/17/2022				5/17/2022	5/17/2022
		Sample ID	LORNG_RFW1147_05102022	LORNG_USMW025_05102022	LORNG_FB01_05172022	LORNG_FB02_05172022	LORNG_FB03_05172022	LORNG_FB04_05172022	LORNG_043-MW03_05172022	LORNG_AA20MW01_05172022
		QC Code	N	N	AB	AB	AB	AB	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2 U	2 U	2 U	2.1 U	2 U	2 U	2 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	5.8 J	2 U	2 U	2.1 U	2 U	2 U	2 U	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2 U	2 U	2 U	2.1 U	2 U	2 U	2 U	2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	2 U	2 U	2.1 U	2 U	2 U	2 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2 U	2 U	2 U	2.1 U	2 U	2 U	10 UJ	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	2 U	2 U	2.1 U	2 U	2 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	6.2	1 U	1 U	1.1 U	1 U	1 U	1.9 J	37.6
		Perfluorobutanoic acid (PFBA)	NG/L	23.2	3.9 J	2 U	2.1 U	2 U	2 U	3.2 J	6.4 J
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	7	1 U	1 U	1.1 U	1 U	1 U	1.2 J	62.6
		Perfluoroheptanoic acid (PFHpA)	NG/L	29.6	2 J	1 U	1.1 U	1 U	1 U	1.7 J	7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	270	13.9	1 U	1.1 U	1 U	1 U	20.5	859
		Perfluorohexanoic acid (PFHxA)	NG/L	55.6	3.1 J	1 U	1.1 U	1 U	1 U	2.5 J	27.9
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 J	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	6.5	1 U	1 U	1.1 U	1 U	1 U	1 U	2.3 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	13.2	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	355	15.7	1 U	1.1 U	1 U	1 U	58	1,880
		Perfluorooctanoic acid (PFOA)	NG/L	57.7	3 J	1 U	1.1 U	1 U	1 U	3.1 J	17.9
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	10.9	1 U	1 U	1.1 U	1 U	1 U	2.1 J	70
		Perfluoropentanoic acid (PFPeA)	NG/L	49.8	3 J	1 U	1.1 U	1 U	1 U	3.2 J	7.8
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95784						FA95834	
		Location		JBW7203A	JMW7322	MMW0006		MMW0132		AA20MW-02	BW06005
		Sample Date		5/17/2022	5/17/2022	5/17/2022		5/17/2022		5/18/2022	5/18/2022
		Sample ID		LORNG_JBW7203A_05172022	LORNG_JMW7322_05172022	LORNG_MMW0006_05172022	LORNG_MMW0006_05172022FD	LORNG_MMW0132_05172022	LORNG_MMW0132_05172022FD	LORNG_AA20MW02_05182022	LORNG_BW06005_05182022
		QC Code		N	N	N	FD	N	FD	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	137
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	120
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	10 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2 U	2 U	2 UJ	10 UJ	10 UJ	10 UJ	10 U	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	10 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 J	1.1 J	1 U	1 U	1 U	1 U	75.4	18
		Perfluorobutanoic acid (PFBA)	NG/L	5.6 J	3 J	2 U	2 U	2.8 J	3.1 J	12.7	88.8
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6 J
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1 J	1 U	1 U	1 U	1 U	1 U	11.8	11.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.3	1.7 J	1 U	1 U	1 U	1 U	18.1	191
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	21.3	19	2.3 J	1.7 J	1 U	1 U	429	203
		Perfluorohexanoic acid (PFHxA)	NG/L	8.3	2.9 J	1 U	1 U	2.2 J	2 J	65.3	160
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	21.7
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	11.8
		Perfluorooctanesulfonic acid (PFOS)	NG/L	26.8	15.5	2.3 J	2.2 J	1 U	1 U	152	635
		Perfluorooctanoic acid (PFOA)	NG/L	6.1	4.2	1 U	1 U	1 U	1 U	25.7	106
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.2 J	1.3 J	1 U	1 U	1 U	1 U	91.7	26
		Perfluoropentanoic acid (PFPeA)	NG/L	11.8	4.1	1.4 J	1.5 J	4.9	4.8	25.7	294
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95834													
		Location	BW17004	FIELDQC		JBW7403	JMW-0806	JMW0880	JMW0882	JMW0891						
		Sample Date	5/18/2022	5/18/2022		5/18/2022	5/18/2022	5/18/2022	5/18/2022	5/19/2022						
		Sample ID	LORNG_BW17004_05182022	LORNG_EB008_05182022		LORNG_EB009_05182022	LORNG_JBW7403_05182022	LORNG_JMW0806_05182022	LORNG_JMW0880_05182022	LORNG_JMW0882_05182022	LORNG_JMW0891_05192022					
		QC Code	N	EB		EB	N	N	N	N	N					
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	2	U	1.9	U	1.9	U	2	U	2	U	1.9	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	2	U	1.9	U	1.9	U	2	U	2	U	1.9	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	2	U	1.9	U	1.9	U	2	U	2	U	1.9	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	2	U	1.9	U	1.9	U	2	U	4.7	J	1.9	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2	U	2	U	2	U	1.9	U	9.3	U	10	UJ	2	R	1.9	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	2	U	1.9	U	1.9	U	2	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.2	J	1	U	1	U	0.93	U	0.93	U	1	U	1.4	J	0.93	U
		Perfluorobutanoic acid (PFBA)	NG/L	3.1	J	2	U	2	U	1.9	U	2	J	2.8	J	2	U	1.9	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1.3	J	0.93	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.6	J	1	U	1	U	0.93	U	0.93	U	1	J	3.1	J	0.93	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	19.5		1	U	1	U	0.93	U	7		7.7		11.9		7.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	5.8		1	U	1	U	0.93	U	2.1	J	2.3	J	4.2		1.7	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluorononanoic acid (PFNA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	UJ	0.93	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	12.1		1	U	1	U	0.93	U	8		11.6		43.9		3.4	J
		Perfluorooctanoic acid (PFOA)	NG/L	6.4		1	U	1	U	0.93	U	2.2	J	3	J	15		3.9	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.6	J	1	U	1	U	0.93	U	0.93	U	1	U	1	J	0.93	U
		Perfluoropentanoic acid (PFPeA)	NG/L	6.6		1	U	1	U	0.93	U	1.4	J	1.8	J	1.5	J	1.3	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	1	U	0.93	U	0.93	U	1	U	1	U	0.93	U

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95834						FA95870	
		Location	JMW1960	JMW3501	JPZ7704	MMW0326	SB/OW17001		AA07MW-01	AA07MW-02
		Sample Date	5/18/2022	5/19/2022	5/18/2022	5/17/2022	5/17/2022		5/19/2022	5/19/2022
		Sample ID	LORNG_JMW1960_05182022	LORNG_JMW3501_05192022	LORNG_JPZ7704_05182022	LORNG_MMW0326_05172022	LORNG_OW17001_05172022	LORNG_OW17001_05172022FD	LORNG_AA07MW01_05192022	LORNG_AA07MW02_05192022
		QC Code	N	N	N	N	N	FD	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	2 U	20.3	5.2 J
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	5.5 J	1.9 U	1.9 U	2 U	2 U	2 U	1,420	268
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	7.5 J	1.9 U	1.9 U	2 U	2 U	2 U	353	40
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	10 U	1.9 U	1.9 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	10 U	1.9 U	1.9 U	10 U	2 U	10 UJ	37 UJ	19 UJ
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	2 U	2.7 J	1.9 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.4	0.93 U	2.2 J	1 U	1.1 J	1.1 J	68.5	32.2
		Perfluorobutanoic acid (PFBA)	NG/L	7.7 J	3.4 J	5.9 J	2.8 J	5.3 J	5.5 J	422	43.3
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	2.3 J	0.93 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	25.6	0.93 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.3 J	0.93 U	0.93 J	1 U	1 U	1 U	99.5	19.2
		Perfluoroheptanoic acid (PFHpA)	NG/L	12.7	2.5 J	4.4	1.3 J	4.4	4.5	883	61.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	85.8	5.8	32.1	2.5 J	14	14	2,550	476
		Perfluorohexanoic acid (PFHxA)	NG/L	23.7	3.1 J	10.5	3.2 J	8.4	8.6	1,470	157
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	30.4 J	0.93 U
		Perfluorononanoic acid (PFNA)	NG/L	1.7 J	0.93 U	0.93 U	1 U	1 U	1 U	160	6.4
		Perfluorooctane sulfonamide (PFOSA)	NG/L	8.9	0.93 U	0.93 U	1 U	1 U	1 U	385	19.2
		Perfluorooctanesulfonic acid (PFOS)	NG/L	234	3.2 J	39.8	5.1	8	8.1	6,980	683
		Perfluorooctanoic acid (PFOA)	NG/L	31.2	3.1 J	9.6	2.3 J	4.1	4.3	1,190	174
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	5.7	0.93 U	2.9 J	1 U	1.1 J	1.2 J	115	46.4
		Perfluoropentanoic acid (PFPeA)	NG/L	21.3	4.1	11.3	5.6	14	14.2	1,780	157
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	1 U	4.7	0.93 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objecti\
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95870															
		Location		CBW02		FIELDQC			JMW-0602		JMW1565		LF2MW1				LF2MW2		
		Sample Date		5/19/2022		5/19/2022			5/19/2022		5/19/2022		5/19/2022				5/19/2022		
		Sample ID		LORNG_CBW02_05192022		LORNG_EB010_05192022		LORNG_EB011_05192022	LORNG_JMW0602_05192022		LORNG_JMW1565_05192022		LORNG_LF2MW1_05192022		LORNG_LF2MW1_05192022FD		LORNG_LF2MW2_05192022		
		QC Code		N		EB		EB	N		N		N		FD		N		
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	2 U	1.9	U	2.1	U	1.9	U	1.9	U	2	U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	2 U	1.9	U	2.1	U	10		8.6		2	U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	2 U	1.9	U	2.1	U	1.9	U	1.9	U	2	U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	2 U	1.9	U	2.1	U	1.9	U	1.9	U	2	U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	20	R	2	U	2 U	9.6	UJ	21	R	9.3	UJ	9.3	UJ	10	UJ	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	2 U	1.9	U	2.1	U	1.9	U	1.9	U	2	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1	U	1	U	1 U	1.9	J	3.7	J	0.93	U	0.93	U	1	U	
		Perfluorobutanoic acid (PFBA)	NG/L	7.6	J	2	U	2 U	3.7	J	12.2		1.9	U	1.9	U	4.4	J	
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3	J	1	U	1 U	2.8	J	12.7		0.93	U	0.93	U	3.2	J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	10.7		1	U	1 U	38.9		50.8		4.8		4.5		8		
		Perfluorohexanoic acid (PFHxA)	NG/L	2.3	J	1	U	1 U	7.3	J	15.2		0.93	UJ	0.93	U	5.8		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluorononanoic acid (PFNA)	NG/L	1	U	1	U	1 U	0.96	U	3.8	J	0.93	U	0.93	U	1	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	9.7		1	U	1 U	42.8		31.5		7.2		7		8		
		Perfluorooctanoic acid (PFOA)	NG/L	2.2	J	1	U	1 U	11.3		17.7		0.93	U	0.93	U	10.1		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	U	1	U	1 U	2.6	J	3.8	J	0.93	U	0.93	U	1	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	J	1	U	1 U	3.9	J	16.8		0.93	UJ	0.93	U	2.9	J	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	UJ	0.93	U	0.93	U	1	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	1 U	0.96	U	1.1	U	0.93	U	0.93	U	1	U	

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		FA95870					FA95898		
		Location		LF2MW3	MMW0002	UNK-044	USGS2		AA18MW-01	AA18MW-02	ASMW101
		Sample Date		5/19/2022	5/20/2022	5/19/2022	5/19/2022		5/22/2022	5/22/2022	5/22/2022
		Sample ID		LORNG_LF2MW3_05192022	LORNG_MMW0002_05202022	LORNG-UNK-044_05192022	LORNG_USGS-2_40_05192022	LORNG_USGS-2_125_05192022	LORNG_AA18MW01_05222022	LORNG_AA18MW02_05222022	LORNG_ASMW101_05222022
		QC Code		N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.7 U	2 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.9 U	2 U	2 U	11.5	13.9	1.7 U	2 U	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.9 U	2 U	2 U	2 U	2.2 J	1.7 U	2 U	2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.9 U	2 U	2 U	2 U	2 U	1.7 U	2 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	9.3 UJ	2 UJ	10 UJ	10 UJ	10 UJ	1.7 U	2 U	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.9 U	2 UJ	2 U	2 U	2 U	1.7 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.93 U	1 U	2.4 J	4.6	5.7	2.6 J	1.1 J	2.1 J
		Perfluorobutanoic acid (PFBA)	NG/L	1.9 U	2 U	3.4 J	14.3	15.2	3.5 J	3.8 J	7.5 J
		Perfluorodecane sulfonate (PFDS)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.93 U	1 U	2.3 J	3 J	3.9 J	1.8 J	1 U	1 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.93 U	1 U	5.8	16.6	19.2	4.8	2.9 J	9.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.3 J	1 U	122	116	168	88.2	8.6	38
		Perfluorohexanoic acid (PFHxA)	NG/L	1.3 J	1 U	23.9	25.6	39	14.4	3.6 J	13
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	0.93 U	1 U	2.3 J	3.1 J	2.9 J	1 J	1 U	1.3 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.93 U	1 U	1 U	3.8 J	6.9	15.9	1 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	3.7	1 U	48.2	141	173	112	4.4	40
		Perfluorooctanoic acid (PFOA)	NG/L	1.3 J	1 U	58.9	31.8	49.4	23.8	2.1 J	8.8
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.93 U	1 U	3.5 J	6.8	8.6	3.6	1.2 J	2.9 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1 J	1 U	5.6	29.7	33.2	6.8	4.6	15.8
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.93 U	1 UJ	1 U	5 U	1 U	0.86 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.93 U	1 U	1 U	1 U	1 U	0.86 U	1 U	1 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95898									
		Location		BW01005		BW05006	FIELDQC						
		Sample Date		5/22/2022		5/21/2022	5/20/2022			5/21/2022			
		Sample ID		LORNG_BW01005_05222022	LORNG_BW01005_05222022FD	LORNG_BW05006_05212022	LORNG_EB012_05202022	LORNG_EB013_05202022	LORNG_EB014_05202022	LORNG_EB015_05212022	LORNG_EB016_05212022		
		QC Code		N	FD	N	EB	EB	EB	EB	EB		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.2 J	4 J	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	262	343	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	5 J	5.5 J	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	2 U	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2 U	2 U	1.9 U	2 U	10 U	2 U	10 U	1.9 U		
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	2 U	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	18.1	20.3	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorobutanoic acid (PFBA)	NG/L	36.8	36.9	1.9 U	2 U	2 U	2 U	2 U	1.9 U		
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	27.1	32.4	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	51.5	54.5	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	551	553	2.4 J	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorohexanoic acid (PFHxA)	NG/L	114	127	1.2 J	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorononanoic acid (PFNA)	NG/L	10.1	10.3	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	19.5	18.5	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	811	867	3.9	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorooctanoic acid (PFOA)	NG/L	157	181	1.6 J	1 U	1 U	1 U	1 U	0.93 U		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	30.1	33.3	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluoropentanoic acid (PFPeA)	NG/L	109	120	1.5 J	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	0.93 U		

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95898													
		Location		FIELDQC					FMW3410		FMW3413		JBW7215B		JBW7316		JBW8009	
		Sample Date		5/22/2022					5/22/2022		5/22/2022		5/22/2022		5/22/2022		5/21/2022	
		Sample ID		LORNG_EB017_05222022		LORNG_EB018_05222022		LORNG_EB019_05222022		LORNG_FMW3410_05222022		LORNG_FMW3413_05222022		LORNG_JBW7215B_05222022		LORNG_JBW7316_05222022		LORNG_JBW8009_05212022	
		QC Code		EB		EB		EB		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.1	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1	U	1	U	1	U	4.4		1.1	J	1.4	J	1	U	1.5	J
		Perfluorobutanoic acid (PFBA)	NG/L	2	U	2	U	2	U	20.2		6.4	J	3.7	J	2.2	J	6.8	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	U	1	U	1	U	1.5	J	1	U	1	U	1	U	0.96	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1	U	1	U	1	U	30.2		7.4		4.1		1.4	J	6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1	U	1	U	1	U	48.5		16.3		18.1		18.1		17.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	1	U	1	U	1	U	33.1		7.7		4.9		1.7	J	6.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluorononanoic acid (PFNA)	NG/L	1	U	1	U	1	U	2.2	J	1	U	1	U	1	U	0.96	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1	U	1	U	1	U	75.5		20.1		24.4		21.3		22.3	
		Perfluorooctanoic acid (PFOA)	NG/L	1	U	1	U	1	U	18.1		5.1		3.8	J	2.6	J	5.2	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	U	1	U	1	U	5.5		1.6	J	2.2	J	1	U	2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1	U	1	U	1	U	59.8		11.8		7.4		1.6	J	13.3	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.96	U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95898							
		Location		JMW0682	JMW0683	JMW0941	JMW0961	JMW0980	JMW0982	JMW0991	JMW0992
		Sample Date		5/20/2022	5/20/2022	5/20/2022	5/21/2022	5/20/2022	5/20/2022	5/21/2022	5/21/2022
		Sample ID		LORNG_JMW0682_05202022	LORNG_JMW0683_05202022	LORNG_JMW0941_05202022	LORNG_JMW0961_05212022	LORNG_JMW0980_05202022	LORNG_JMW0982_05202022	LORNG_JMW0991_05212022	LORNG_JMW0992_05212022
		QC Code		N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2 U	2.7 J	1.9 U	2 U	2 U	1.9 U	1.9 U	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	1.9 U	1.9 U	2.1 J	6.5 J	1.9 U	1.9 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2 U	9.3 UJ	9.3 UJ	4 R	20 R	9.3 UJ	1.9 UJ	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	1.9 U	1.9 U	2 U	2 U	3.7 J	1.9 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.7 J	3.1 J	0.93 U	1 U	4.2	1 J	0.93 U	1 U
		Perfluorobutanoic acid (PFBA)	NG/L	2.9 J	7.4	1.9 U	3.6 J	3.3 J	3.2 J	1.9 U	2 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1 U	5.2	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.7 J	7.3	0.93 U	3.5 J	3.1 J	3.9	0.99 J	1 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13.6	83.2	0.93 U	13.6	20.4	12.1	6.7	1 J
		Perfluorohexanoic acid (PFHxA)	NG/L	2.9 J	17.1	0.93 U	8.5	9.5	9.8	2.7 J	1 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	1 U	1.2 J	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1 U	0.97 J	0.93 U	1 U	2.1 J	0.93 U	0.93 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13.3	218	0.93 U	21.1	33.4	19	12.9	1 U
		Perfluorooctanoic acid (PFOA)	NG/L	3 J	24.7	0.93 U	15	11.5	12.5	6.5	1.1 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2 J	5.6	0.93 U	1.6 J	4.7	1.4 J	0.93 U	1 U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.9 J	11.1	0.93 U	3.3 J	3.2 J	5.2	1.7 J	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	0.93 U	0.93 U	1 UJ	1 UJ	4.6 U	0.93 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	0.93 U	0.93 U	1 U	1 U	0.93 U	0.93 U	1 U

Notes:
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95898							
		Location	JMW7913	JMW7916	LF3MW3	LF3MW4	MMW0015	MMW0018B	MMW3402R	OW22001
		Sample Date	5/20/2022	5/21/2022	5/20/2022	5/20/2022	5/20/2022	5/21/2022	5/21/2022	5/20/2022
		Sample ID	LORNG_JMW7913_05202022	LORNG_JMW7916_05212022	LORNG_LF3MW3_05202022	LORNG_LF3MW4_05202022	LORNG_MMW0015_05202022	LORNG_MMW0018B_05212022	LORNG_MMW3402R_05212022	LORNG_OW22001_05202022
		QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2 U	2 U	1.9 U	2.1 U	2 U	2 U	2 U	2 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2 U	2 U	1.9 U	2.1 U	2 U	2 U	2.2 J	2 U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2 U	2 U	1.9 U	2.1 U	2 U	2 U	2 U	2 U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2 U	2 U	1.9 U	2.1 U	2 U	2 U	2 U	2 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	10 U	2 UJ	1.9 U	21 R	2 U	2 U	10 U	2 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2 U	2 U	1.9 U	2.1 U	2 U	2 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1 U	1.3 J	0.93 U	1.8 J	1 U	1 U	2.9 J	1 U
		Perfluorobutanoic acid (PFBA)	NG/L	2 U	2.4 J	1.9 U	2.1 U	2 U	2 U	13.8	2 U
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1 U	2.3 J	0.93 U	1.7 J	1 U	1 U	3.4 J	1 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1 U	2.3 J	0.93 U	7	1 U	1 U	9.1	15
		Perfluorohexanoic acid (PFHxA)	NG/L	1 U	2.5 J	0.93 U	3.4 J	1 U	1 U	4.7	1.7 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluorononanoic acid (PFNA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1.3 J	1 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	5 U	1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1 U	4.7	0.93 U	13.7	1 U	3.3 J	8.2	28.9
		Perfluorooctanoic acid (PFOA)	NG/L	1 U	10.6	0.93 U	6.7	1 U	1 U	4.6	2.7 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluoropentanoic acid (PFPeA)	NG/L	1 U	2.5 J	0.93 U	2.3 J	1 U	1 U	4.9	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	1 U	0.93 U	5.2 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	1 U	0.93 U	1 U	1 U	1 U	1 U	1 U

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG	FA95898					FA95936		
		Location	RFW1144	RFW-38	SB/OW16001	UNK-033		044-RW01	BW05007	
		Sample Date	5/21/2022	5/21/2022	5/20/2022	5/22/2022		5/23/2022	5/23/2022	
		Sample ID	LORNG_RFW1144_05212022	LORNG_RFW-38_05212022	LORNG_OW16001_05202022	LORNG-UNK-033_05222022	LORNG-UNK-033_05222022FD	LORNG_044-RW01_05232022	LORNG_BW05007_05232022	LORNG_BW05007_05232022FD
		QC Code	N	N	N	N	FD	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	1.9 U	2 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	1.9 U	2 U	2.3 J	1.9 U	2 U	2 U	160	177
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	1.9 U	2 U	2 U	1.9 U	2 U	2 U	23.1	33.8
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1.9 U	2 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	1.9 U	2 U	2 U	9.3 U	4 R	9.3 UJ	1.9 U	1.9 U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1.9 U	2 U	2 U	1.9 U	2 U	2 U	1.9 U	1.9 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.1 J	1 U	1 U	15.9	16	1 U	38.4	41.2
		Perfluorobutanoic acid (PFBA)	NG/L	9.8	2 U	10	10.3	10.3	2 U	67.3	71.7
		Perfluorodecane sulfonate (PFDS)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	1 J
		Perfluorododecanoic acid (PFDoA)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.6 J	1 U	1 U	12.4	11.8	1 U	26.3	30.6
		Perfluoroheptanoic acid (PFHpA)	NG/L	10.5	1 U	2.9 J	13.7	14.1	1 U	114	123
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	67	1 U	17.2	186	192	1 U	422	381
		Perfluorohexanoic acid (PFHxA)	NG/L	14.7	1 U	8.2	27.1	28	1 U	150	162
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U
		Perfluorononanoic acid (PFNA)	NG/L	1.5 J	1 U	1 U	2 J	2 J	1 U	21.8	25.5
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.6 J	1 U	1 U	0.93 U	1 U	1 U	2.3 J	4.2
		Perfluorooctanesulfonic acid (PFOS)	NG/L	94.2	1 U	6	266	274	1 U	1,640	2,050
		Perfluorooctanoic acid (PFOA)	NG/L	16	1 U	8.6	19.3	19.8	1 U	100	110
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.3	1 U	1 U	25.4	26.6	1 U	54.5	59.1
		Perfluoropentanoic acid (PFPeA)	NG/L	19.4	1 U	7	28.6	28.9	1 U	239	263
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.93 U	1 U	1 U	0.93 U	1 U	1 U	0.93 U	0.93 U

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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

		SDG		FA95936							FA95976	
		Location		FIELDQC	JBW7314	JBW8003B	JBW8004B	JMW8011	JPZ1382	MMW8015	WWTP_WSW	
		Sample Date		5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/24/2022	
		Sample ID		LORNG_EB020_05232022	LORNG_JBW7314_05232022	LORNG_JBW8003B_05232022	LORNG_JMW8004B_05232022	LORNG_JMW8011_05232022	LORNG_JPZ1382_05232022	LORNG_MMW8015_05232022	LORNG_WWTP_WSW_05242022	
		QC Code		EB	N	N	N	N	N	N	N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2.1 U	1.9 U	2 U	2 U	2.4 J	1.9 U	2.3 J	2 U	
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2.1 U	1.9 U	53	140	157	1.9 U	143	2 U	
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2.1 U	1.9 U	21.6	49.4	51.7	1.9 U	35.2	2 U	
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2.1 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U	2 U	
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	2.1 U	19 R	20 U	40 UJ	40 U	9.3 U	19 U	2 U	
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2.1 U	1.9 U	2 U	2 U	2 U	1.9 U	1.9 U	2 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1 U	0.93 U	35.5	38.7	39.7	0.93 U	36.2	1 U	
		Perfluorobutanoic acid (PFBA)	NG/L	2.1 U	1.9 U	41.8	54.3	55.5	1.9 U	47.4	2 U	
		Perfluorodecane sulfonate (PFDS)	NG/L	1 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U	1 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	0.93 U	1 U	1.6 J	1.8 J	0.93 U	1.5 J	1 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U	1 U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1 U	0.93 U	24	30.2	32.7	0.93 U	30.5	1 U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1 U	0.93 U	97	113	116	0.93 U	90.2	1 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1 U	2.7 J	1,160	1,300	1,440	1.9 J	1,110	1.5 J	
		Perfluorohexanoic acid (PFHxA)	NG/L	1 U	0.93 U	304	311	342	0.93 U	291	1 U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	0.93 U	1 U	1 U	1 U	0.93 U	3.5 J	1 U	
		Perfluorononanoic acid (PFNA)	NG/L	1 U	0.93 U	20.7	17.3	18.8	0.93 U	15.2	1 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1 U	1.9 R	15.5	32	36.4	0.93 U	30.5	1 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1 U	5.4	1,490	1,630	2,020	0.93 U	1,600	6.4	
		Perfluorooctanoic acid (PFOA)	NG/L	1 U	1.7 J	308	317	343	0.93 U	335	1 U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1 U	0.93 U	46	52.9	56.9	0.93 U	51.3	1 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1 U	1.2 J	119	174	182	0.93 U	151	1 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1 U	1.9 R	1 U	1 U	1 U	0.93 U	0.93 U	1 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U	1 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1 U	0.93 U	1 U	1 U	1 U	0.93 U	0.93 U	1 U	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limetone, Maine

			SDG	FA96108	
			Location	FIELDQC	
			Sample Date	6/1/2022	
			Sample ID	LORNG_FB05_06012022	
			QC Code	AB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	2	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	2	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	2	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	2	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	10	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1	U
		Perfluorobutanoic acid (PFBA)	NG/L	2	U
		Perfluorodecane sulfonate (PFDS)	NG/L	1	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U
		Perfluorononanoic acid (PFNA)	NG/L	1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1	U
		Perfluorooctanoic acid (PFOA)	NG/L	1	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1	U

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Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				200-63331				200-63332		200-63422				200-63423				200-63531		200-63533		200-63534	
Location				JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
Sample Date				5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
Sample ID				LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
QC Code				N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L																				
		1,1,1-TRICHLOROETHANE	UG/L																				
		1,1,2,2-TETRACHLOROETHANE	UG/L																				
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L																				
		1,1,2-TRICHLOROETHANE	UG/L																				
		1,1-DICHLOROETHANE	UG/L																				
		1,1-DICHLOROETHENE	UG/L																				
		1,1-DICHLOROPROPENE	UG/L																				
		1,2,3-TRICHLOROBENZENE	UG/L																				
		1,2,3-TRICHLOROPROPANE	UG/L																				
		1,2,4-TRICHLOROBENZENE	UG/L																				
		1,2,4-TRIMETHYLBENZENE	UG/L																				
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L																				
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L																				
		1,2-DICHLOROBENZENE	UG/L																				
		1,2-DICHLOROETHANE	UG/L																				
		1,2-DICHLOROPROPANE	UG/L																				
		1,3,5-TRICHLOROBENZENE	UG/L																				
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L																				
		1,3-DICHLOROBENZENE	UG/L																				
		1,3-DICHLOROPROPANE	UG/L																				
		1,4-DICHLOROBENZENE	UG/L																				
		2,2-DICHLOROPROPANE	UG/L																				
		2-CHLOROTOLUENE	UG/L																				
		2-HEXANONE	UG/L																				
		4-CHLOROTOLUENE	UG/L																				
		ACETONE	UG/L																				
		BENZENE	UG/L																				
		BROMOBENZENE	UG/L																				
		BROMOCHLOROMETHANE	UG/L																				
		BROMODICHLOROMETHANE	UG/L																				
		BROMOFORM	UG/L																				

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63331				200-63332		200-63422				200-63423		200-63531		200-63533		200-63534	
			Location	JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
			Sample Date	5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
			Sample ID	LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
			QC Code	N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	BROMOMETHANE	UG/L																				
		CARBON DISULFIDE	UG/L																				
		CARBON TETRACHLORIDE	UG/L																				
		CHLOROBENZENE	UG/L																				
		CHLOROETHANE	UG/L																				
		CHLOROFORM	UG/L																				
		CHLOROMETHANE	UG/L																				
		CIS-1,2-DICHLOROETHYLENE	UG/L																				
		CIS-1,3-DICHLOROPROPENE	UG/L																				
		CYCLOHEXANE	UG/L																				
		DIBROMOCHLOROMETHANE	UG/L																				
		DIBROMOMETHANE	UG/L																				
		DICHLORODIFLUOROMETHANE	UG/L																				
		ETHYLBENZENE	UG/L																				
		HEXACHLOROBUTADIENE	UG/L																				
		IODOMETHANE (METHYL IODIDE)	UG/L																				
		ISOPROPYLBENZENE (CUMENE)	UG/L																				
		M,P-XYLENE (SUM OF ISOMERS)	UG/L																				
		METHYL ACETATE	UG/L																				
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L																				
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L																				
		METHYLCYCLOHEXANE	UG/L																				
		METHYLENE CHLORIDE	UG/L																				
		NAPHTHALENE	UG/L																				
		N-BUTYLBENZENE	UG/L																				
		N-PROPYLBENZENE	UG/L																				
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L																				
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L																				
		SEC-BUTYLBENZENE	UG/L																				
		STYRENE	UG/L																				
		T-BUTYLBENZENE	UG/L																				
		TERT-BUTYL METHYL ETHER	UG/L																				
		TETRACHLOROETHYLENE(PCE)	UG/L																				
		TOLUENE	UG/L																				

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Former Loring Air Force Base, Limestone, Maine

SDG				200-63331				200-63332		200-63422				200-63423				200-63531		200-63533		200-63534	
Location				JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
Sample Date				5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
Sample ID				LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
QC Code				N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	TRANS-1,2-DICHLOROETHENE	UG/L																				
		TRANS-1,3-DICHLOROPROPENE	UG/L																				
		TRICHLOROETHYLENE (TCE)	UG/L																				
		TRICHLOROFLUOROMETHANE	UG/L																				
		VINYL ACETATE	UG/L																				
		VINYL CHLORIDE	UG/L																				
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L																				
		2-METHYLNAPHTHALENE	UG/L																				
		ACENAPHTHENE	UG/L																				
		ACENAPHTHYLENE	UG/L																				
		ANTHRACENE	UG/L																				
		BENZO(A)ANTHRACENE	UG/L																				
		BENZO(A)PYRENE	UG/L																				
		BENZO(B)FLUORANTHENE	UG/L																				
		BENZO(G,H,I)PERYLENE	UG/L																				
		BENZO(K)FLUORANTHENE	UG/L																				
		CHRYSENE	UG/L																				
		DIBENZ(A,H)ANTHRACENE	UG/L																				
		FLUORANTHENE	UG/L																				
		FLUORENE	UG/L																				
		INDENO(1,2,3-C,D)PYRENE	UG/L																				
		NAPHTHALENE	UG/L																				
		PENTACHLOROPHENOL	UG/L																				
		PHENANTHRENE	UG/L																				
		PYRENE	UG/L																				
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L																				
		1,2-DICHLOROBENZENE	UG/L																				
		1,2-DIPHENYLHYDRAZINE	UG/L																				
		1,3-DICHLOROBENZENE	UG/L																				
		1,4-DICHLOROBENZENE	UG/L																				
		1-METHYLNAPHTHALENE	UG/L																				
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L																				
		2,3,4,6-TETRACHLOROPHENOL	UG/L																				
		2,4,5-TRICHLOROPHENOL	UG/L																				
		2,4,6-TRICHLOROPHENOL	UG/L																				

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Former Loring Air Force Base, Limestone, Maine

			SDG	200-63331				200-63332		200-63422				200-63423		200-63531		200-63533		200-63534	
			Location	JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
			Sample Date	5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
			Sample ID	LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
			QC Code	N		N		N		N		FD		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	2,4-DICHLOROPHENOL	UG/L																				
		2,4-DIMETHYLPHENOL	UG/L																				
		2,4-DINITROPHENOL	UG/L																				
		2,4-DINITROTOLUENE	UG/L																				
		2,6-DINITROTOLUENE	UG/L																				
		2-CHLORONAPHTHALENE	UG/L																				
		2-CHLOROPHENOL	UG/L																				
		2-METHYLPHENOL (O-CRESOL)	UG/L																				
		2-NITROANILINE	UG/L																				
		2-NITROPHENOL	UG/L																				
		3,3'-DICHLOROBENZIDINE	UG/L																				
		3-NITROANILINE	UG/L																				
		4,6-DINITRO-2-METHYLPHENOL	UG/L																				
		4-BROMOPHENYL PHENYL ETHER	UG/L																				
		4-CHLORO-3-METHYLPHENOL	UG/L																				
		4-CHLOROANILINE	UG/L																				
		4-CHLOROPHENYL PHENYL ETHER	UG/L																				
		4-NITROANILINE	UG/L																				
		4-NITROPHENOL	UG/L																				
		ANTHRACENE	UG/L																				
		BENZALDEHYDE	UG/L																				
		BENZIDINE	UG/L																				
		BENZOIC ACID	UG/L																				
		BENZYL ALCOHOL	UG/L																				
		BENZYL BUTYL PHTHALATE	UG/L																				
		BIPHENYL (DIPHENYL)	UG/L																				
		BIS(2-CHLOROETHOXY) METHANE	UG/L																				
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L																				
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L																				
		CARBAZOLE	UG/L																				
		CRESOLS, M & P	UG/L																				
		DIETHYL PHTHALATE	UG/L																				
		DIMETHYL PHTHALATE	UG/L																				

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Former Loring Air Force Base, Limestone, Maine

SDG				200-63331				200-63332		200-63422				200-63423				200-63531		200-63533		200-63534	
Location				JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
Sample Date				5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
Sample ID				LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
QC Code				N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SVOCs	T	DI-N-BUTYL PHTHALATE	UG/L																				
		DI-N-OCTYLPHTHALATE	UG/L																				
		HEXACHLOROBENZENE	UG/L																				
		HEXACHLOROBUTADIENE	UG/L																				
		HEXACHLOROCYCLOPENTADIENE	UG/L																				
		HEXACHLOROETHANE	UG/L																				
		ISOPHORONE	UG/L																				
		NITROBENZENE	UG/L																				
		N-NITROSODIMETHYLAMINE	UG/L																				
		N-NITROSODI-N-PROPYLAMINE	UG/L																				
		N-NITROSODIPHENYLAMINE	UG/L																				
		PHENOL	UG/L																				
		PYRIDINE	UG/L																				
PCBs	T	PCB, TOTAL	UG/L																				
		PCB-1016 (AROCLOR 1016)	UG/L																				
		PCB-1221 (AROCLOR 1221)	UG/L																				
		PCB-1232 (AROCLOR 1232)	UG/L																				
		PCB-1242 (AROCLOR 1242)	UG/L																				
		PCB-1248 (AROCLOR 1248)	UG/L																				
		PCB-1254 (AROCLOR 1254)	UG/L																				
		PCB-1260 (AROCLOR 1260)	UG/L																				
		PCB-1262 (AROCLOR 1262)	UG/L																				
		PCB-1268 (AROCLOR 1268)	UG/L																				
Pesticides	T	ALDRIN	UG/L																				
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L																				
		ALPHA ENDOSULFAN	UG/L																				
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L																				
		BETA ENDOSULFAN	UG/L																				
		CIS-CHLORDANE	UG/L																				
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L																				
		DIELDRIN	UG/L																				
		ENDOSULFAN SULFATE	UG/L																				

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG				200-63331				200-63332		200-63422				200-63423				200-63531		200-63533		200-63534	
Location				JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
Sample Date				5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
Sample ID				LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
QC Code				N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Pesticides	T	ENDRIN	UG/L																				
		ENDRIN ALDEHYDE	UG/L																				
		ENDRIN KETONE	UG/L																				
		GAMMA BHC (LINDANE)	UG/L																				
		GAMMA-CHLORDANE	UG/L																				
		HEPTACHLOR	UG/L																				
		HEPTACHLOR EPOXIDE	UG/L																				
		METHOXYCHLOR	UG/L																				
		P,P'-DDD	UG/L																				
		P,P'-DDE	UG/L																				
		P,P'-DDT	UG/L																				
		TOXAPHENE	UG/L																				
Metals	D	ALUMINUM	UG/L																				
		ANTIMONY	UG/L																				
		ARSENIC	UG/L																				
		BARIUM	UG/L																				
		BERYLLIUM	UG/L																				
		CADMIUM	UG/L																				
		CALCIUM	UG/L																				
		CHROMIUM, TOTAL	UG/L																				
		COBALT	UG/L																				
		COPPER	UG/L																				
		IRON	UG/L																				
		LEAD	UG/L																				
		MAGNESIUM	UG/L																				
		MANGANESE	UG/L																				
		MERCURY	UG/L																				
		NICKEL	UG/L																				
		POTASSIUM	UG/L																				
		SELENIUM	UG/L																				
		SILVER	UG/L																				
		SODIUM	UG/L																				
		THALLIUM	UG/L																				
		VANADIUM	UG/L																				

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		200-63331				200-63332		200-63422				200-63423				200-63531		200-63533		200-63534	
		Location		JBW7737B		SB/OW12001		JBW7339B		MMW0124				JBW7338B		OW21005		BW06005		SB/OW16001		BW05007	
		Sample Date		5/6/2022		5/6/2022		5/5/2022		5/10/2022				5/9/2022		5/9/2022		5/18/2022		5/20/2022		5/23/2022	
		Sample ID		LORNG_JBW7737B_05062022_E		LORNG_OW12001_05062022_E		LORNG_JBW7339B_05052022_E		LORNG_MMW0124_05102022_E		LORNG_MMW0124_05102022FD_E		LORNG_JBW7338B_05092022_E		LORNG_OW21005_05092022_E		LORNG_BW06005_05182022_E		LORNG_OW16001_05202022_E		LORNG_BW05007_05232022_E	
		QC Code		N		N		N		N		FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	D	ZINC	UG/L																				
Metals	T	ALUMINUM	UG/L																				
		ANTIMONY	UG/L																				
		ARSENIC	UG/L																				
		BARIUM	UG/L																				
		BERYLLIUM	UG/L																				
		CADMIUM	UG/L																				
		CALCIUM	UG/L																				
		CHROMIUM, TOTAL	UG/L																				
		COBALT	UG/L																				
		COPPER	UG/L																				
		IRON	UG/L																				
		LEAD	UG/L																				
		MAGNESIUM	UG/L																				
		MANGANESE	UG/L																				
		MERCURY	UG/L																				
		NICKEL	UG/L																				
		POTASSIUM	UG/L																				
		SELENIUM	UG/L																				
		SILVER	UG/L																				
		SODIUM	UG/L																				
		THALLIUM	UG/L																				
		VANADIUM	UG/L																				
		ZINC	UG/L																				
Perchlorate	T	PERCHLORATE	UG/L	0.2	U	0.2	U	200	U	0.2	U	0.2	U	0.2	U	0.2	U	0.1	U	0.1	U	0.2	U

Notes:

N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank

UG/L = micrograms per liter

UJ = Analyte not detected and the associated detection limits are estimated

U = Analyte not detected at the associated detection limits

J = Analyte present; the reported value may not be accurate or precise

R = Result is rejected

SVOCs = semivolatile organic compounds

VOCs = volatile organic compounds

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	200-63534		SP2142		SP2161		SP2189			
		Location	BW05007	JMW8011	FIELDQC	JBW7339B	FIELDQC	JBW7348	FIELDQC	JBW7737B		JMW0445
		Sample Date	5/23/2022	5/23/2022	5/5/2022	5/5/2022	5/5/2022	5/5/2022	5/6/2022	5/6/2022		5/8/2022
		Sample ID	LORNG_BW05007_05232022FD_E	LORNG_JMW8011_05232022_E	LORNG_TB01_05052022	LORNG_JBW7339B_05052022_K	LORNG_TB02_05052022	LORNG_JBW7348_05052022_K	LORNG_TB03_05062022	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	LORNG_JMW0445_05082022_K
		QC Code	FD	N	TB	N	TB	N	TB	N	FD	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,1,1-TRICHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	35	0.5 U	0.5 U	0.5 U	0.5 U
		1,1,2,2-TETRACHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,1,2-TRICHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,1-DICHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.79 J	0.5 U	0.5 U	0.5 U	0.5 U
		1,1-DICHLOROETHENE	UG/L			0.5 U	0.5 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U
		1,1-DICHLOROPROPENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2,3-TRICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2,3-TRICHLOROPROPANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2,4-TRICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2,4-TRIMETHYLBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	46
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L			0.75 U	0.023 U	0.75 U	0.024 U	0.75 U	0.024 U	0.024 U	0.024 U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L			0.5 U	0.023 U	0.5 U	0.024 U	0.5 U	0.024 U	0.024 U	0.024 U
		1,2-DICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2-DICHLOROETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,2-DICHLOROPROPANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,3,5-TRICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	19
		1,3-DICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,3-DICHLOROPROPANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1,4-DICHLOROBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		2,2-DICHLOROPROPANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		2-CHLOROTOLUENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		2-HEXANONE	UG/L			2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		4-CHLOROTOLUENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		ACETONE	UG/L			2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		BENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	14
		BROMOBENZENE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		BROMOCHLOROMETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		BROMODICHLOROMETHANE	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		BROMOFORM	UG/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		200-63534				SP2142				SP2161		SP2189			
		Location		BW05007		JMW8011		FIELDQC		JBW7339B		FIELDQC		JBW7348		FIELDQC	
		Sample Date		5/23/2022		5/23/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/6/2022	
		Sample ID		LORNG_BW05007_05232022FD_E		LORNG_JMW8011_05232022_E		LORNG_TB01_05052022		LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022		LORNG_JBW7348_05052022_K		LORNG_TB03_05062022	
		QC Code		FD		N		TB		N		TB		N		TB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	BROMOMETHANE	UG/L					1	U	1	U	1	U	1	U	1	U
		CARBON DISULFIDE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CARBON TETRACHLORIDE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROETHANE	UG/L					1	U	1	U	1	U	1	U	1	U
		CHLOROFORM	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CHLOROMETHANE	UG/L					1	U	1	U	1	U	1	U	1	U
		CIS-1,2-DICHLOROETHYLENE	UG/L					0.5	U	0.92	J	0.5	U	260		0.5	U
		CIS-1,3-DICHLOROPROPENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		CYCLOHEXANE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOCHLOROMETHANE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DIBROMOMETHANE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		DICHLORODIFLUOROMETHANE	UG/L					1	U	1	U	1	U	1	U	1	U
		ETHYLBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		HEXACHLOROBUTADIENE	UG/L					0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
		IODOMETHANE (METHYL IODIDE)	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		ISOPROPYLBENZENE (CUMENE)	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L					1	U	1	U	1	U	1	U	1	U
		METHYL ACETATE	UG/L					0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L					2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L					2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		METHYLCYCLOHEXANE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		METHYLENE CHLORIDE	UG/L					7.2		9.5	U	2.5	U	2.5	U	2.5	U
		NAPHTHALENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		N-BUTYLBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		N-PROPYLBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		SEC-BUTYLBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		STYRENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		T-BUTYLBENZENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TERT-BUTYL METHYL ETHER	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		TETRACHLOROETHYLENE(PCE)	UG/L					0.5	U	0.47	J	0.5	U	1.1		0.5	U
		TOLUENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

		SDG		SP2189													
		Location		JBW7737B				JMW0445									
		Sample Date		5/6/2022				5/8/2022									
		Sample ID		LORNG_JBW7737B_05062022_K		LORNG_JBW7737B_05062022FD_K		LORNG_JMW0445_05082022_K									
		QC Code		N		FD		N									
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier								
VOCs	T	BROMOMETHANE	UG/L	1	U	1	U	1	U								
		CARBON DISULFIDE	UG/L	0.5	U	0.5	U	0.5	U								
		CARBON TETRACHLORIDE	UG/L	0.5	U	0.5	U	0.5	U								
		CHLOROBENZENE	UG/L	0.5	U	0.5	U	0.5	U								
		CHLOROETHANE	UG/L	1	U	1	U	1	U								
		CHLOROFORM	UG/L	0.5	U	0.5	U	0.5	U								
		CHLOROMETHANE	UG/L	1	U	1	U	1	U								
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.26	J	0.33	J	0.5	U								
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5	U	0.5	U	0.5	U								
		CYCLOHEXANE	UG/L	0.5	U	0.5	U	65									
		DIBROMOCHLOROMETHANE	UG/L	0.5	U	0.5	U	0.5	U								
		DIBROMOMETHANE	UG/L	0.5	U	0.5	U	0.5	U								
		DICHLORODIFLUOROMETHANE	UG/L	1	U	1	U	1	U								
		ETHYLBENZENE	UG/L	0.5	U	0.5	U	0.5	U								
		HEXACHLOROBUTADIENE	UG/L	0.75	U	0.75	U	0.75	U								
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5	U	0.5	U	0.5	U								
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5	U	0.5	U	6.8									
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1	U	1	U	15									
		METHYL ACETATE	UG/L	0.75	U	0.75	U	0.75	U								
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5	U	2.5	U	2.5	U								
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5	U	2.5	U	2.5	U								
		METHYLCYCLOHEXANE	UG/L	0.5	U	0.5	U	120									
		METHYLENE CHLORIDE	UG/L	2.5	U	2.5	U	1.6	J								
		NAPHTHALENE	UG/L	0.5	U	0.5	U	3.6									
		N-BUTYLBENZENE	UG/L	0.5	U	0.5	U	2.2									
		N-PROPYLBENZENE	UG/L	0.5	U	0.5	U	8.9									
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5	U	0.5	U	0.28	J								
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5	U	0.5	U	3.6									
		SEC-BUTYLBENZENE	UG/L	0.5	U	0.5	U	3.2									
		STYRENE	UG/L	0.5	U	0.5	U	0.5	U								
		T-BUTYLBENZENE	UG/L	0.5	U	0.5	U	0.51	J								
		TERT-BUTYL METHYL ETHER	UG/L	0.5	U	0.5	U	0.5	U								
		TETRACHLOROETHYLENE(PCE)	UG/L	0.9	J	0.79	J	0.5	U								
		TOLUENE	UG/L	0.5	U	0.5	U	0.47	J								

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Former Loring Air Force Base, Limestone, Maine

SDG				200-63534				SP2142				SP2161				SP2189					
Location				BW05007		JMW8011		FIELDQC		JBW7339B		FIELDQC		JBW7348		FIELDQC		JBW7737B			JMW0445
Sample Date				5/23/2022		5/23/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/6/2022		5/6/2022			5/8/2022
Sample ID				LORNG_BW05007_05232022FD_E		LORNG_JMW8011_05232022_E		LORNG_TB01_05052022		LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022		LORNG_JBW7348_05052022_K		LORNG_TB03_05062022		LORNG_JBW7737B_05062022_K		LORNG_JBW7737B_05062022FD_K	LORNG_JMW0445_05082022_K
QC Code				FD		N		TB		N		TB		N		TB		N		FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier
VOCs	T	TRANS-1,2-DICHLOROETHENE	UG/L					0.5	U	0.5	U	0.5	U	1.5		0.5	U	0.5	U	0.5 U	0.5 U
		TRANS-1,3-DICHLOROPROPENE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5 U	0.5 U
		TRICHLOROETHYLENE (TCE)	UG/L					0.5	U	1.7		0.5	U	490		0.5	U	0.83	J	0.75 J	0.5 U
		TRICHLOROFLUOROMETHANE	UG/L					1	U	1	U	1	U	1	U	1	U	1	U	1 U	1 U
		VINYL ACETATE	UG/L					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5 U	0.5 U
		VINYL CHLORIDE	UG/L					1	U	1	U	1	U	0.43	J	1	U	1	U	1 U	1 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L							0.17	U			0.17	U						
		2-METHYLNAPHTHALENE	UG/L							0.093	U			0.093	U						6.5 J
		ACENAPHTHENE	UG/L							0.093	U			0.093	U						0.13 J
		ACENAPHTHYLENE	UG/L							0.093	U			0.093	U						0.094 U
		ANTHRACENE	UG/L							0.093	U			0.093	UJ						0.094 U
		BENZO(A)ANTHRACENE	UG/L							0.093	U			0.093	U						0.094 U
		BENZO(A)PYRENE	UG/L							0.093	UJ			0.093	UJ						0.094 UJ
		BENZO(B)FLUORANTHENE	UG/L							0.093	U			0.093	U						0.094 U
		BENZO(G,H,I)PERYLENE	UG/L							0.093	U			0.093	U						0.094 U
		BENZO(K)FLUORANTHENE	UG/L							0.093	U			0.093	U						0.094 U
		CHRYSENE	UG/L							0.093	U			0.093	U						0.094 U
		DIBENZ(A,H)ANTHRACENE	UG/L							0.093	U			0.093	U						0.094 U
		FLUORANTHENE	UG/L							0.093	U			0.093	U						0.094 U
		FLUORENE	UG/L							0.093	U			0.093	U						0.13 J
		INDENO(1,2,3-C,D)PYRENE	UG/L							0.093	U			0.093	U						0.094 U
		NAPHTHALENE	UG/L							0.093	U			0.093	U						3.1 J
		PENTACHLOROPHENOL	UG/L							0.47	U			0.093	UJ						0.47 U
		PHENANTHRENE	UG/L							0.093	U			0.093	U						0.1 J
		PYRENE	UG/L							0.093	U			0.093	U						0.094 U
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L							7	U			7	U						7.1 U
		1,2-DICHLOROBENZENE	UG/L							7	U			7	U						7.1 U
		1,2-DIPHENYLHYDRAZINE	UG/L							14	U			14	U						14 U
		1,3-DICHLOROBENZENE	UG/L							7	U			7	U						7.1 U
		1,4-DICHLOROBENZENE	UG/L							7	U			7	U						7.1 U
		1-METHYLNAPHTHALENE	UG/L							7	U			7	U						5.4 J
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L							7	U			7	U						7.1 U
		2,3,4,6-TETRACHLOROPHENOL	UG/L							7	R			7	R						7.1 R
		2,4,5-TRICHLOROPHENOL	UG/L							18	R			18	R						18 R
		2,4,6-TRICHLOROPHENOL	UG/L							7	R			7	R						7.1 R

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		SDG		200-63534			SP2142			SP2161			SP2189				
		Location		BW05007	JMW8011		FIELDQC	JBW7339B		FIELDQC	JBW7348		FIELDQC	JBW7737B			JMW0445
		Sample Date		5/23/2022	5/23/2022		5/5/2022	5/5/2022		5/5/2022	5/5/2022		5/6/2022	5/6/2022			5/8/2022
		Sample ID		LORNG_BW05007_05232022FD_E	LORNG_JMW8011_05232022_E		LORNG_TB01_05052022	LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022	LORNG_JBW7348_05052022_K		LORNG_TB03_05062022	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K		LORNG_JMW0445_05082022_K
		QC Code		FD	N		TB	N		TB	N		TB	N	FD		N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier		Result Qualifier	Result Qualifier		Result Qualifier	Result Qualifier		Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier
SVOCs	T	2,4-DICHLOROPHENOL	UG/L					7 R			7 UJ						7.1 R
		2,4-DIMETHYLPHENOL	UG/L					7 UJ			7 UJ						7.1 UJ
		2,4-DINITROPHENOL	UG/L					18 UJ			18 UJ						18 UJ
		2,4-DINITROTOLUENE	UG/L					7 U			7 U						7.1 U
		2,6-DINITROTOLUENE	UG/L					7 U			7 U						7.1 U
		2-CHLORONAPHTHALENE	UG/L					7 U			7 U						7.1 U
		2-CHLOROPHENOL	UG/L					7 R			7 R						7.1 R
		2-METHYLPHENOL (O-CRESOL)	UG/L					7 UJ			7 UJ						7.1 UJ
		2-NITROANILINE	UG/L					18 U			18 U						18 U
		2-NITROPHENOL	UG/L					7 R			7 R						7.1 R
		3,3'-DICHLOROBENZIDINE	UG/L					7 U			7 U						7.1 U
		3-NITROANILINE	UG/L					18 U			18 U						18 U
		4,6-DINITRO-2-METHYLPHENOL	UG/L					18 UJ			18 UJ						18 UJ
		4-BROMOPHENYL PHENYL ETHER	UG/L					7 U			7 U						7.1 U
		4-CHLORO-3-METHYLPHENOL	UG/L					7 UJ			7 UJ						7.1 UJ
		4-CHLOROANILINE	UG/L					7 U			7 U						7.1 U
		4-CHLOROPHENYL PHENYL ETHER	UG/L					7 U			7 U						7.1 U
		4-NITROANILINE	UG/L					18 U			18 U						18 U
		4-NITROPHENOL	UG/L					18 U			18 UJ						18 U
		ANTHRACENE	UG/L					7 U			7 U						7.1 U
		BENZALDEHYDE	UG/L					7 U			7 UJ						7.1 U
		BENZIDINE	UG/L					35 R			35 R						35 R
		BENZOIC ACID	UG/L					18 R			18 R						18 R
		BENZYL ALCOHOL	UG/L					14 U			14 UJ						14 U
		BENZYL BUTYL PHTHALATE	UG/L					7 U			7 U						7.1 U
		BIPHENYL (DIPHENYL)	UG/L					7 U			7 U						7.1 U
		BIS(2-CHLOROETHOXY) METHANE	UG/L					7 U			7 U						7.1 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L					7 U			7 U						7.1 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L					7 U			1.8 J						2.1 J
		CARBAZOLE	UG/L					7 U			7 U						7.1 U
		CRESOLS, M & P	UG/L					7 UJ			7 UJ						7.1 UJ
		DIETHYL PHTHALATE	UG/L					7 U			7 U						7.1 U
		DIMETHYL PHTHALATE	UG/L					7 U			7 U						7.1 U

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63534				SP2142				SP2161		SP2189					
			Location	BW05007		JMW8011		FIELDQC		JBW7339B		FIELDQC		JBW7348		FIELDQC	JBW7737B		JMW0445
			Sample Date	5/23/2022		5/23/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/6/2022	5/6/2022		5/8/2022
			Sample ID	LORNG_BW05007_05232022FD_E		LORNG_JMW8011_05232022_E		LORNG_TB01_05052022		LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022		LORNG_JBW7348_05052022_K		LORNG_TB03_05062022	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	LORNG_JMW0445_05082022_K
			QC Code	FD		N		TB		N		TB		N		TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	DI-N-BUTYL PHTHALATE	UG/L							7 U				7 U					7.1 U
		DI-N-OCTYLPHTHALATE	UG/L							7 U				7 U					7.1 U
		HEXACHLOROBENZENE	UG/L							7 U				7 U					7.1 U
		HEXACHLOROBUTADIENE	UG/L							7 U				7 U					7.1 U
		HEXACHLOROCYCLOPENTADIENE	UG/L							7 R				7 R					7.1 R
		HEXACHLOROETHANE	UG/L							7 U				7 U					7.1 U
		ISOPHORONE	UG/L							7 U				7 U					7.1 U
		NITROBENZENE	UG/L							7 U				7 U					7.1 U
		N-NITROSODIMETHYLAMINE	UG/L							7 U				7 U					7.1 U
		N-NITROSODI-N-PROPYLAMINE	UG/L							7 U				7 U					7.1 U
		N-NITROSODIPHENYLAMINE	UG/L							7 U				7 UJ					7.1 U
		PHENOL	UG/L							7 R				7 R					7.1 R
		PYRIDINE	UG/L							35 U				35 U					35 U
PCBs	T	PCB, TOTAL	UG/L																
		PCB-1016 (AROCLOR 1016)	UG/L																
		PCB-1221 (AROCLOR 1221)	UG/L																
		PCB-1232 (AROCLOR 1232)	UG/L																
		PCB-1242 (AROCLOR 1242)	UG/L																
		PCB-1248 (AROCLOR 1248)	UG/L																
		PCB-1254 (AROCLOR 1254)	UG/L																
		PCB-1260 (AROCLOR 1260)	UG/L																
		PCB-1262 (AROCLOR 1262)	UG/L																
		PCB-1268 (AROCLOR 1268)	UG/L																
Pesticides	T	ALDRIN	UG/L																
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L																
		ALPHA ENDOSULFAN	UG/L																
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L																
		BETA ENDOSULFAN	UG/L																
		CIS-CHLORDANE	UG/L																
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L																
		DIELDRIN	UG/L																
		ENDOSULFAN SULFATE	UG/L																

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63534				SP2142				SP2161				SP2189							
			Location	BW05007		JMW8011		FIELDQC		JBW7339B		FIELDQC		JBW7348		FIELDQC		JBW7737B				JMW0445	
			Sample Date	5/23/2022		5/23/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/6/2022		5/6/2022				5/8/2022	
			Sample ID	LORNG_BW05007_05232022FD_E		LORNG_JMW8011_05232022_E		LORNG_TB01_05052022		LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022		LORNG_JBW7348_05052022_K		LORNG_TB03_05062022		LORNG_JBW7737B_05062022_K		LORNG_JBW7737B_05062022FD_K		LORNG_JMW0445_05082022_K	
			QC Code	FD		N		TB		N		TB		N		TB		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Pesticides	T	ENDRIN	UG/L																				
		ENDRIN ALDEHYDE	UG/L																				
		ENDRIN KETONE	UG/L																				
		GAMMA BHC (LINDANE)	UG/L																				
		GAMMA-CHLORDANE	UG/L																				
		HEPTACHLOR	UG/L																				
		HEPTACHLOR EPOXIDE	UG/L																				
		METHOXYCHLOR	UG/L																				
		P,P'-DDD	UG/L																				
		P,P'-DDE	UG/L																				
		P,P'-DDT	UG/L																				
		TOXAPHENE	UG/L																				
Metals	D	ALUMINUM	UG/L																				
		ANTIMONY	UG/L																				
		ARSENIC	UG/L																				
		BARIUM	UG/L																				
		BERYLLIUM	UG/L																				
		CADMIUM	UG/L																				
		CALCIUM	UG/L																				
		CHROMIUM, TOTAL	UG/L																				
		COBALT	UG/L																				
		COPPER	UG/L																				
		IRON	UG/L																				
		LEAD	UG/L																				
		MAGNESIUM	UG/L																				
		MANGANESE	UG/L																				
		MERCURY	UG/L																				
		NICKEL	UG/L																				
		POTASSIUM	UG/L																				
		SELENIUM	UG/L																				
		SILVER	UG/L																				
		SODIUM	UG/L																				
		THALLIUM	UG/L																				
		VANADIUM	UG/L																				

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	200-63534				SP2142				SP2161				SP2189			
			Location	BW05007		JMW8011		FIELDQC		JBW7339B		FIELDQC		JBW7348		FIELDQC	JBW7737B		JMW0445
			Sample Date	5/23/2022		5/23/2022		5/5/2022		5/5/2022		5/5/2022		5/5/2022		5/6/2022	5/6/2022		5/8/2022
			Sample ID	LORNG_BW05007_05232022FD_E		LORNG_JMW8011_05232022_E		LORNG_TB01_05052022		LORNG_JBW7339B_05052022_K		LORNG_TB02_05052022		LORNG_JBW7348_05052022_K		LORNG_TB03_05062022	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	LORNG_JMW0445_05082022_K
			QC Code	FD		N		TB		N		TB		N		TB	N	FD	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Result Qualifier	Result Qualifier	Result Qualifier
Metals	D	ZINC	UG/L																
		ALUMINUM	UG/L							45	J			23	J				288 J
		ANTIMONY	UG/L							1	U			0.5	U				1 U
		ARSENIC	UG/L							4	U			4	U				4 U
		BARIUM	UG/L							60.6				48.2					61.9
		BERYLLIUM	UG/L							0.5	U			0.5	U				0.5 U
		CADMIUM	UG/L							3	U			3	U				3 U
		CALCIUM	UG/L							96,200				89,000					142,000
		CHROMIUM, TOTAL	UG/L							4	U			4	U				1 J
		COBALT	UG/L							0.32	J			4	U				0.5 J
		COPPER	UG/L							1	J			0.93	J				1.7 J
		IRON	UG/L							382				10	J				1,850
Metals	T	LEAD	UG/L							0.5	U			0.5	U				0.41 J
		MAGNESIUM	UG/L							13,700				14,000					19,500
		MANGANESE	UG/L							194				2.5	J				166
		MERCURY	UG/L							0.1	U			0.1	U				0.021 J
		NICKEL	UG/L							0.57	J			4	U				1.4 J
		POTASSIUM	UG/L							918	J			695	J				830 J
		SELENIUM	UG/L							3	U			3	U				3 U
		SILVER	UG/L							0.4	U			0.4	U				0.4 U
		SODIUM	UG/L							3,480				5,060					11,400
		THALLIUM	UG/L							0.15	J			0.4	U				0.22 J
		VANADIUM	UG/L							4	U			0.42	J				0.32 J
		ZINC	UG/L							1.9	J			10	U				1.7 J
Perchlorate	T	PERCHLORATE	UG/L	0.2	U	0.2	U												

Notes:

N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank

UG/L = micrograms per liter

UJ = Analyte not detected and the associated detection limits are estima

U = Analyte not detected at the associated detection limits

J = Analyte present; the reported value may not be accurate or precise

R = Result is rejected

SVOCs = semivolatile organic compounds

VOCs = volatile organic compounds

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222							SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005	MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022	5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1,1-TRICHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1,2,2-TETRACHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1,2-TRICHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1-DICHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,1-DICHLOROETHENE	UG/L		0.5 U	0.5 U	0.82 J		0.5 U		0.5 U	0.5 U		
		1,1-DICHLOROPROPENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2,3-TRICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2,3-TRICHLOROPROPANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2,4-TRICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2,4-TRIMETHYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L		0.024 U	0.75 U	0.024 U		0.024 U		0.023 U	0.024 U		
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L		0.024 U	0.5 U	0.024 U		0.024 U		0.023 U	0.024 U		
		1,2-DICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2-DICHLOROETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,2-DICHLOROPROPANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,3,5-TRICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,3-DICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,3-DICHLOROPROPANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		1,4-DICHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		2,2-DICHLOROPROPANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		2-CHLOROTOLUENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		2-HEXANONE	UG/L		2.5 U	2.5 U	2.5 U		2.5 U		2.5 U	2.5 U		
		4-CHLOROTOLUENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		ACETONE	UG/L		2.5 U	2.5 U	2.5 U		2.5 U		2.5 U	2.5 U		
		BENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		BROMOBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		BROMOCHLOROMETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		BROMODICHLOROMETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		BROMOFORM	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222							SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005	MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022	5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	BROMOMETHANE	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		CARBON DISULFIDE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		CARBON TETRACHLORIDE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		CHLOROBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		CHLOROETHANE	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		CHLOROFORM	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		CHLOROMETHANE	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		CIS-1,2-DICHLOROETHYLENE	UG/L		0.5 U	0.5 U	9		0.5 U		0.5 U	0.5 U		
		CIS-1,3-DICHLOROPROPENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		CYCLOHEXANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		DIBROMOCHLOROMETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		DIBROMOMETHANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		DICHLORODIFLUOROMETHANE	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		ETHYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		HEXACHLOROBUTADIENE	UG/L		0.75 U	0.75 U	0.75 U		0.75 U		0.75 U	0.75 U		
		IODOMETHANE (METHYL IODIDE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		ISOPROPYLBENZENE (CUMENE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		M,P-XYLENE (SUM OF ISOMERS)	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		METHYL ACETATE	UG/L		0.75 U	0.75 U	0.75 U		0.75 U		0.75 U	0.75 U		
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L		2.5 U	2.5 U	2.5 U		2.5 U		2.5 U	2.5 U		
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L		2.5 U	2.5 U	2.5 U		2.5 U		2.5 U	2.5 U		
		METHYLCYCLOHEXANE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		METHYLENE CHLORIDE	UG/L		2.5 U	1.2 J	2.5 U		2.5 U		2.5 U	2.5 U		
		NAPHTHALENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		N-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		N-PROPYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		SEC-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		STYRENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		T-BUTYLBENZENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		TERT-BUTYL METHYL ETHER	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		TETRACHLOROETHYLENE(PCE)	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		TOLUENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222							SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005	MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022	5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	TRANS-1,2-DICHLOROETHENE	UG/L		0.5 U	0.5 U	0.47 J		0.5 U		0.5 U	0.5 U		
		TRANS-1,3-DICHLOROPROPENE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		TRICHLOROETHYLENE (TCE)	UG/L		0.5 U	0.5 U	22		0.5 U		0.5 U	0.5 U		
		TRICHLOROFLUOROMETHANE	UG/L		1 U	1 U	1 U		1 U		1 U	1 U		
		VINYL ACETATE	UG/L		0.5 U	0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		
		VINYL CHLORIDE	UG/L		1 U	1 U	4.1		1 U		1 U	1 U		
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L				0.17 U						0.17 U	0.17 U
		2-METHYLNAPHTHALENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		ACENAPHTHENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		ACENAPHTHYLENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		ANTHRACENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		BENZO(A)ANTHRACENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		BENZO(A)PYRENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 UJ		
		BENZO(B)FLUORANTHENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		BENZO(G,H,I)PERYLENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		BENZO(K)FLUORANTHENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		CHRYSENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		DIBENZ(A,H)ANTHRACENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		FLUORANTHENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		FLUORENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		INDENO(1,2,3-C,D)PYRENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		NAPHTHALENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		PENTACHLOROPHENOL	UG/L				0.47 U		0.47 U		0.47 U	0.47 U		
		PHENANTHRENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
		PYRENE	UG/L				0.094 U		0.094 U		0.094 U	0.094 U		
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		1,2-DICHLOROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		1,2-DIPHENYLHYDRAZINE	UG/L				14 U		14 U		14 U	14 U		
		1,3-DICHLOROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		1,4-DICHLOROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		1-METHYLNAPHTHALENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2,3,4,6-TETRACHLOROPHENOL	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2,4,5-TRICHLOROPHENOL	UG/L				18 UJ		18 UJ		18 UJ	18 UJ		
		2,4,6-TRICHLOROPHENOL	UG/L				7.1 UJ		7.1 UJ		7.1 UJ	7.1 UJ		

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222								SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005		MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022		5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K		LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N		N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	2,4-DICHLOROPHENOL	UG/L				7.1 UJ		7.1 UJ		7.1 UJ	7.1 UJ		
		2,4-DIMETHYLPHENOL	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2,4-DINITROPHENOL	UG/L				18 U		18 U		18 U	18 U		
		2,4-DINITROTOLUENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2,6-DINITROTOLUENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2-CHLORONAPHTHALENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2-CHLOROPHENOL	UG/L				7.1 UJ		7.1 UJ		7.1 UJ	7.1 UJ		
		2-METHYLPHENOL (O-CRESOL)	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		2-NITROANILINE	UG/L				18 U		18 U		18 U	18 U		
		2-NITROPHENOL	UG/L				7.1 UJ		7.1 UJ		7.1 UJ	7.1 UJ		
		3,3'-DICHLOROBENZIDINE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		3-NITROANILINE	UG/L				18 U		18 U		18 U	18 U		
		4,6-DINITRO-2-METHYLPHENOL	UG/L				18 U		18 U		18 U	18 U		
		4-BROMOPHENYL PHENYL ETHER	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		4-CHLORO-3-METHYLPHENOL	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		4-CHLOROANILINE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		4-CHLOROPHENYL PHENYL ETHER	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		4-NITROANILINE	UG/L				18 U		18 U		18 U	18 U		
		4-NITROPHENOL	UG/L				18 U		18 U		18 U	18 U		
		ANTHRACENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		BENZALDEHYDE	UG/L				7.1 UJ		7.1 UJ		7.1 U	7.1 U		
		BENZIDINE	UG/L				35 U		35 UJ		35 U	35 U		
		BENZOIC ACID	UG/L				18 UJ		18 U		18 U	18 UJ		
		BENZYL ALCOHOL	UG/L				14 U		14 U		14 U	14 U		
		BENZYL BUTYL PHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		BIPHENYL (DIPHENYL)	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		BIS(2-CHLOROETHOXY) METHANE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		CARBAZOLE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		CRESOLS, M & P	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		DIETHYL PHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		DIMETHYL PHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222								SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005		MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022		5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K		LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N		N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	DI-N-BUTYL PHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		DI-N-OCTYLPHTHALATE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		HEXACHLOROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		HEXACHLOROBUTADIENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		HEXACHLOROCYCLOPENTADIENE	UG/L				7.1 UJ		7.1 UJ		7.1 UJ	7.1 UJ		
		HEXACHLOROETHANE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		ISOPHORONE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		NITROBENZENE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		N-NITROSODIMETHYLAMINE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		N-NITROSODI-N-PROPYLAMINE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		N-NITROSODIPHENYLAMINE	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		PHENOL	UG/L				7.1 U		7.1 U		7.1 U	7.1 U		
		PYRIDINE	UG/L				35 U		35 U		35 U	35 U		
PCBs	T	PCB, TOTAL	UG/L								0.22 U	0.21 U		
		PCB-1016 (AROCLOR 1016)	UG/L								0.024 U	0.024 U		
		PCB-1221 (AROCLOR 1221)	UG/L								0.024 U	0.024 U		
		PCB-1232 (AROCLOR 1232)	UG/L								0.024 U	0.024 U		
		PCB-1242 (AROCLOR 1242)	UG/L								0.024 U	0.024 U		
		PCB-1248 (AROCLOR 1248)	UG/L								0.024 U	0.024 U		
		PCB-1254 (AROCLOR 1254)	UG/L								0.024 U	0.024 U		
		PCB-1260 (AROCLOR 1260)	UG/L								0.024 U	0.024 U		
		PCB-1262 (AROCLOR 1262)	UG/L								0.024 U	0.024 U		
		PCB-1268 (AROCLOR 1268)	UG/L								0.024 U	0.024 U		
Pesticides	T	ALDRIN	UG/L											
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L											
		ALPHA ENDOSULFAN	UG/L											
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L											
		BETA ENDOSULFAN	UG/L											
		CIS-CHLORDANE	UG/L											
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L											
		DIELDRIN	UG/L											
		ENDOSULFAN SULFATE	UG/L											

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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2189		SP2222							SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005	MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022	5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Pesticides	T	ENDRIN	UG/L											
		ENDRIN ALDEHYDE	UG/L											
		ENDRIN KETONE	UG/L											
		GAMMA BHC (LINDANE)	UG/L											
		GAMMA-CHLORDANE	UG/L											
		HEPTACHLOR	UG/L											
		HEPTACHLOR EPOXIDE	UG/L											
		METHOXYCHLOR	UG/L											
		P,P'-DDD	UG/L											
		P,P'-DDE	UG/L											
		P,P'-DDT	UG/L											
		TOXAPHENE	UG/L											
Metals	D	ALUMINUM	UG/L	100 U				28 J		18 J				
		ANTIMONY	UG/L	1 U				0.578 U		0.552 U				
		ARSENIC	UG/L	4 U				4 U		4 U				
		BARIUM	UG/L	57.3				87.3 J		62.2 J				
		BERYLLIUM	UG/L	0.5 U				0.5 U		0.5 U				
		CADMIUM	UG/L	3 U				3 U		3 U				
		CALCIUM	UG/L	140,000				105,000		70,900				
		CHROMIUM, TOTAL	UG/L	0.94 J				0.8 J		0.4 J				
		COBALT	UG/L	0.37 J				3.12 J		4 U				
		COPPER	UG/L	2.6 J				1.2 J		1.3 J				
		IRON	UG/L	80 U				5.4 J		21 J				
		LEAD	UG/L	0.5 U				0.2 J		0.5 U				
		MAGNESIUM	UG/L	19,300				13,000		9,230				
		MANGANESE	UG/L	128				661		11.3				
		MERCURY	UG/L	0.1 U				0.1 U		0.1 U				
		NICKEL	UG/L	1.2 J				1 J		0.38 J				
		POTASSIUM	UG/L	822 J				765 J		891 J				
		SELENIUM	UG/L	3 U				3 U		3 U				
		SILVER	UG/L	0.4 U				0.4 U		0.4 U				
		SODIUM	UG/L	11,200				3,920		2,620				
		THALLIUM	UG/L	0.06 J				0.085 J		0.23 J				
		VANADIUM	UG/L	4 U				4 U		4 U				

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		SDG	SP2189		SP2222							SP2277	
		Location	JMW0445	SB/OW12001	FIELDQC	JBW7338B		JBW7711		JPZ0349	OW21005	MMW0124	
		Sample Date	5/8/2022	5/6/2022	5/9/2022	5/9/2022		5/9/2022		5/9/2022	5/9/2022	5/10/2022	
		Sample ID	LORNG_JMW0445_05082022F	LORNG_OW12001_05062022_K	LORNG_TB04_05092022	LORNG_JBW7338B_05092022_K	LORNG_JBW7338B_05092022F	LORNG_JBW7711_05092022_K	LORNG_JBW7711_05092022F	LORNG_JPZ0349_05092022_K	LORNG_OW21005_05092022_K	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K
		QC Code	N	N	TB	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	D	ZINC	UG/L	38.1 J				26.2 J		6.5 J			
		ALUMINUM	UG/L				20 J		285 J		54 J	51 J	
		ANTIMONY	UG/L				0.52 J		0.644 J		0.47 J	0.607 J	
		ARSENIC	UG/L				4 U		4 U		4 U	4 U	
		BARIUM	UG/L				74.5		57.1		29.6	23.7	
		BERYLLIUM	UG/L				0.5 U		0.5 U		0.5 U	0.5 U	
		CADMIUM	UG/L				3 U		3 U		3 U	3 U	
		CALCIUM	UG/L				112,000		68,800		87,200	85,300	
		CHROMIUM, TOTAL	UG/L				0.78 J		1.2 J		0.88 J	0.66 J	
		COBALT	UG/L				3.56 J		1.4 J		4 U	4 U	
		COPPER	UG/L				10 U		1.8 J		1.3 J	2 J	
		IRON	UG/L				3,750 J		3,370		61.2 J	502	
Metals	T	LEAD	UG/L				0.5 U		0.51 J		0.11 J	0.5 U	
		MAGNESIUM	UG/L				13,900 J		9,080		11,700	3,800	
		MANGANESE	UG/L				707		164		132	13.7	
		MERCURY	UG/L				0.017 J		0.019 J		0.019 J	0.02 J	
		NICKEL	UG/L				1.4 J		1.4 J		0.37 J	4 U	
		POTASSIUM	UG/L				810 J		954 J		963 J	1,300	
		SELENIUM	UG/L				3 U		3 U		3 U	3 U	
		SILVER	UG/L				0.4 U		0.4 U		0.072 J	0.4 U	
		SODIUM	UG/L				4,100		2,530		18,800	26,900	
		THALLIUM	UG/L				0.086 J		0.074 J		0.4 U	0.33 J	
		VANADIUM	UG/L				4 U		4 U		4 U	0.37 J	
		ZINC	UG/L				1.6 J		6.6 J		1.5 J	2.3 J	
Perchlorate	T	PERCHLORATE	UG/L										

Notes:

N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank

UG/L = micrograms per liter

UJ = Analyte not detected and the associated detection limits are estimat

U = Analyte not detected at the associated detection limits

J = Analyte present; the reported value may not be accurate or precise

R = Result is rejected

SVOCs = semivolatile organic compounds

VOCs = volatile organic compounds

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2481			WOOD-LORING-1					WOOD-LORING-2	
		Location	FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
		Sample Date	5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
		Sample ID	LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code	TB	N	N	N	N	TB	N	FD	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1,1-TRICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1,2,2-TETRACHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1,2-TRICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1-DICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,1-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2,3-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2,3-TRICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2,4-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2,4-TRIMETHYLBENZENE	UG/L	0.5 U	16	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U			0.024 U	0.024 U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U			0.024 U	0.024 U
		1,2-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2-DICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,2-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,3,5-TRICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,3-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,3-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		1,4-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		2,2-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		2-CHLOROTOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		2-HEXANONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U
		4-CHLOROTOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		ACETONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U
		BENZENE	UG/L	0.5 U	5.5	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		BROMOBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		BROMOCHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		BROMODICHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		BROMOFORM	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2481				WOOD-LORING-1							WOOD-LORING-2	
		Location		FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
		Sample Date		5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
		Sample ID		LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code		TB	N	N	N	N	TB	N	FD	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	BROMOMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		CARBON DISULFIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CARBON TETRACHLORIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CHLOROETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		CHLOROFORM	UG/L	0.5 U	0.5 U	0.72 J	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CHLOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		CYCLOHEXANE	UG/L	0.5 U	33	1.1	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		DIBROMOCHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		DIBROMOMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		DICHLORODIFLUOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		ETHYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		HEXACHLOROBUTADIENE	UG/L	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U			0.75 U	0.75 U
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5 U	4.6	0.33 J	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		METHYL ACETATE	UG/L	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U			0.75 U	0.75 U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5 U	2.5 U	11	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U
		METHYLCYCLOHEXANE	UG/L	0.5 U	62	3	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		METHYLENE CHLORIDE	UG/L	1.6 J	1.8 J	1.3 J	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U
		NAPHTHALENE	UG/L	0.5 U	1.4	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		N-BUTYLBENZENE	UG/L	0.5 U	0.76 J	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		N-PROPYLBENZENE	UG/L	0.5 U	4.1	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5 U	0.37 J	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		SEC-BUTYLBENZENE	UG/L	0.5 U	2	0.28 J	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		STYRENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		T-BUTYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TERT-BUTYL METHYL ETHER	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TETRACHLOROETHYLENE(PCE)	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	SP2481										WOOD-LORING-2	
			Location	FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
			Sample Date	5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
			Sample ID	LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
			QC Code	TB	N	N	N	N	TB	N	FD	N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
VOCs	T	TRANS-1,2-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TRANS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TRICHLOROETHYLENE (TCE)	UG/L	0.5 U	0.5 U	0.65 J	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		TRICHLOROFLUOROMETHANE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
		VINYL ACETATE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U
		VINYL CHLORIDE	UG/L	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L				0.17 U	0.17 U					
		2-METHYLNAPHTHALENE	UG/L		1.2	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		ACENAPHTHENE	UG/L		0.38	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		ACENAPHTHYLENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		ANTHRACENE	UG/L		0.095 UJ	0.096 UJ	0.094 U	0.096 U				0.093 U	0.093 U
		BENZO(A)ANTHRACENE	UG/L		0.095 UJ	0.096 UJ	0.094 U	0.096 U				0.093 U	0.093 U
		BENZO(A)PYRENE	UG/L		0.095 U	0.096 UJ	0.094 U	0.096 U				0.093 U	0.093 U
		BENZO(B)FLUORANTHENE	UG/L		0.095 U	0.096 U	0.094 U	0.092 J				0.093 U	0.093 U
		BENZO(G,H,I)PERYLENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		BENZO(K)FLUORANTHENE	UG/L		0.084 J	0.096 UJ	0.094 U	0.14 J				0.093 U	0.093 U
		CHRYSENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		DIBENZ(A,H)ANTHRACENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		FLUORANTHENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		FLUORENE	UG/L		0.27	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		INDENO(1,2,3-C,D)PYRENE	UG/L		0.095 U	0.096 U	0.13 U	0.096 U				0.093 U	0.093 U
		NAPHTHALENE	UG/L		1.2	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		PENTACHLOROPHENOL	UG/L		0.47 UJ	0.48 U	0.47 U	0.48 U				0.47 UJ	0.47 UJ
		PHENANTHRENE	UG/L		0.19 J	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
		PYRENE	UG/L		0.095 U	0.096 U	0.094 U	0.096 U				0.093 U	0.093 U
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		1,2-DICHLOROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		1,2-DIPHENYLHYDRAZINE	UG/L		14 U	14 U	14 U	14 U				14 U	14 U
		1,3-DICHLOROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		1,4-DICHLOROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		1-METHYLNAPHTHALENE	UG/L		4.2 J	7.2 U	7.1 U	7.2 U				7 U	7 U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		2,3,4,6-TETRACHLOROPHENOL	UG/L		7.1 UJ	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2,4,5-TRICHLOROPHENOL	UG/L		18 UJ	18 UJ	18 U	18 U				18 UJ	18 UJ
		2,4,6-TRICHLOROPHENOL	UG/L		7.1 UJ	7.2 UJ	7.1 U	7.2 U				7 UJ	7 UJ

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

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Data Usability Summary Report
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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2481			WOOD-LORING-1					WOOD-LORING-2	
		Location		FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
		Sample Date		5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
		Sample ID		LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code		TB	N	N	N	N	TB	N	FD	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	2,4-DICHLOROPHENOL	UG/L		7.1 UJ	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2,4-DIMETHYLPHENOL	UG/L		7.1 UJ	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2,4-DINITROPHENOL	UG/L		18 UJ	18 U	18 U	18 U				18 U	18 U
		2,4-DINITROTOLUENE	UG/L		7.1 U	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2,6-DINITROTOLUENE	UG/L		7.1 U	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2-CHLORONAPHTHALENE	UG/L		7.1 U	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		2-CHLOROPHENOL	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		2-METHYLPHENOL (O-CRESOL)	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		2-NITROANILINE	UG/L		18 U	18 U	18 U	18 U				18 U	18 U
		2-NITROPHENOL	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		3,3'-DICHLOROBENZIDINE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		3-NITROANILINE	UG/L		18 U	18 U	18 U	18 U				18 U	18 U
		4,6-DINITRO-2-METHYLPHENOL	UG/L		18 UJ	18 U	18 U	18 U				18 U	18 U
		4-BROMOPHENYL PHENYL ETHER	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		4-CHLORO-3-METHYLPHENOL	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		4-CHLOROANILINE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		4-CHLOROPHENYL PHENYL ETHER	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		4-NITROANILINE	UG/L		18 U	18 U	18 U	18 U				18 U	18 U
		4-NITROPHENOL	UG/L		18 UJ	18 U	18 U	18 U				18 U	18 U
		ANTHRACENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		BENZALDEHYDE	UG/L		7.1 UJ	7.2 UJ	7.1 U	7.2 U				7 U	7 U
		BENZIDINE	UG/L		36 U	36 U	35 U	36 U				35 U	35 U
		BENZOIC ACID	UG/L		18 UJ	18 UJ	18 U	18 U				18 U	18 U
		BENZYL ALCOHOL	UG/L		14 UJ	14 U	14 U	14 U				14 U	14 U
		BENZYL BUTYL PHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		BIPHENYL (DIPHENYL)	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		BIS(2-CHLOROETHOXY) METHANE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		CARBAZOLE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		CRESOLS, M & P	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		DIETHYL PHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		DIMETHYL PHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2481			WOOD-LORING-1					WOOD-LORING-2	
		Location	FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
		Sample Date	5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
		Sample ID	LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code	TB	N	N	N	N	TB	N	FD	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
SVOCs	T	DI-N-BUTYL PHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		DI-N-OCTYLPHTHALATE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		HEXACHLOROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		HEXACHLOROBUTADIENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		HEXACHLOROCYCLOPENTADIENE	UG/L		7.1 R	7.2 R	7.1 U	7.2 U				7 U	7 U
		HEXACHLOROETHANE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		ISOPHORONE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		NITROBENZENE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		N-NITROSODIMETHYLAMINE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		N-NITROSODI-N-PROPYLAMINE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		N-NITROSODIPHENYLAMINE	UG/L		7.1 U	7.2 U	7.1 U	7.2 U				7 U	7 U
		PHENOL	UG/L		7.1 UJ	7.2 U	7.1 U	7.2 U				7 U	7 U
		PYRIDINE	UG/L		36 U	36 U	35 U	36 U				35 U	35 U
PCBs	T	PCB, TOTAL	UG/L									0.21 U	0.21 U
		PCB-1016 (AROCLOR 1016)	UG/L									0.023 U	0.023 U
		PCB-1221 (AROCLOR 1221)	UG/L									0.023 U	0.023 U
		PCB-1232 (AROCLOR 1232)	UG/L									0.023 U	0.023 U
		PCB-1242 (AROCLOR 1242)	UG/L									0.023 U	0.023 U
		PCB-1248 (AROCLOR 1248)	UG/L									0.023 U	0.023 U
		PCB-1254 (AROCLOR 1254)	UG/L									0.023 U	0.023 U
		PCB-1260 (AROCLOR 1260)	UG/L									0.023 U	0.023 U
		PCB-1262 (AROCLOR 1262)	UG/L									0.023 U	0.023 U
		PCB-1268 (AROCLOR 1268)	UG/L									0.023 U	0.023 U
Pesticides	T	ALDRIN	UG/L									0.0023 U	0.0023 U
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L									0.0023 U	0.0023 U
		ALPHA ENDOSULFAN	UG/L									0.0023 U	0.0023 U
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L									0.0023 U	0.0023 U
		BETA ENDOSULFAN	UG/L									0.0047 U	0.0047 U
		CIS-CHLORDANE	UG/L									0.0023 U	0.0023 U
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L									0.0023 U	0.0023 U
		DIELDRIN	UG/L									0.0047 U	0.0047 U
		ENDOSULFAN SULFATE	UG/L									0.0047 U	0.0047 U

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		SP2481						WOOD-LORING-1								WOOD-LORING-2	
		Location		FIELDQC		JMW0683		SB/OW16001		AA07MW-01		BW06005		FIELDQC		SB/OW17001		BW05007	
		Sample Date		5/20/2022		5/20/2022		5/20/2022		5/19/2022		5/18/2022		5/19/2022		5/17/2022		5/23/2022	
		Sample ID		LORNG_TB07_05202022		LORNG_JMW0683_05202022_K		LORNG_OW16001_05202022_K		LORNG_AA07MW01_05192022_K		LORNG_BW06005_05182022_K		LORNG_TB06_05192022		LORNG_OW17001_05172022_K		LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code		TB		N		N		N		N		TB		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Pesticides	T	ENDRIN	UG/L															0.0047	U	0.0047	U
		ENDRIN ALDEHYDE	UG/L															0.0047	U	0.0047	U
		ENDRIN KETONE	UG/L															0.0047	U	0.0047	U
		GAMMA BHC (LINDANE)	UG/L															0.0023	U	0.0023	U
		GAMMA-CHLORDANE	UG/L															0.0023	U	0.0023	U
		HEPTACHLOR	UG/L															0.0023	U	0.0023	U
		HEPTACHLOR EPOXIDE	UG/L															0.0023	U	0.0023	U
		METHOXYCHLOR	UG/L															0.023	U	0.023	U
		P,P'-DDD	UG/L															0.0047	U	0.0047	U
		P,P'-DDE	UG/L															0.0047	U	0.0047	U
		P,P'-DDT	UG/L															0.0047	U	0.0047	U
		TOXAPHENE	UG/L															0.047	U	0.047	U
Metals	D	ALUMINUM	UG/L																		
		ANTIMONY	UG/L																		
		ARSENIC	UG/L																		
		BARIUM	UG/L																		
		BERYLLIUM	UG/L																		
		CADMIUM	UG/L																		
		CALCIUM	UG/L																		
		CHROMIUM, TOTAL	UG/L																		
		COBALT	UG/L																		
		COPPER	UG/L																		
		IRON	UG/L																		
		LEAD	UG/L																		
		MAGNESIUM	UG/L																		
		MANGANESE	UG/L																		
		MERCURY	UG/L																		
		NICKEL	UG/L																		
		POTASSIUM	UG/L																		
		SELENIUM	UG/L																		
		SILVER	UG/L																		
		SODIUM	UG/L																		
		THALLIUM	UG/L																		
		VANADIUM	UG/L																		

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Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	SP2481			WOOD-LORING-1					WOOD-LORING-2	
		Location	FIELDQC	JMW0683	SB/OW16001	AA07MW-01	BW06005	FIELDQC	SB/OW17001		BW05007	
		Sample Date	5/20/2022	5/20/2022	5/20/2022	5/19/2022	5/18/2022	5/19/2022	5/17/2022		5/23/2022	
		Sample ID	LORNG_TB07_05202022	LORNG_JMW0683_05202022_K	LORNG_OW16001_05202022_K	LORNG_AA07MW01_05192022_K	LORNG_BW06005_05182022_K	LORNG_TB06_05192022	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K
		QC Code	TB	N	N	N	N	TB	N	FD	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
Metals	D	ZINC	UG/L										
Metals	T	ALUMINUM	UG/L		100 J	120 J	98 J	37 J		77 J	72 J	130 J	140 J
		ANTIMONY	UG/L		0.5 U	0.5 U	0.5 U	0.52 U		0.5 U	0.5 U	0.579 U	0.51 U
		ARSENIC	UG/L		3 J	4 U	4 U	4 U		4 U	4 U	4 U	4 U
		BARIUM	UG/L		98.8	25.8	11.5	39.3		25.9	26	172	185
		BERYLLIUM	UG/L		0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U
		CADMIUM	UG/L		3 U	3 U	3 U	3 U		3 U	3 U	3 U	3 U
		CALCIUM	UG/L		107,000	101,000	86,100	55,100		59,100	59,900	120,000	129,000
		CHROMIUM, TOTAL	UG/L		0.78 J	0.62 J	0.62 J	0.37 J		0.58 J	0.65 J	0.98 J	1.3 J
		COBALT	UG/L		8.11 J	0.28 J	4 U	4 U		4 U	4 U	4 U	4 U
		COPPER	UG/L		10 U	1.6 J	2 J	0.83 J		1.1 J	0.87 J	2.5 J	2.8 J
		IRON	UG/L		6,770	99.8 U	27 J	10 J		44 J	46 J	47 J	49 J
		LEAD	UG/L		0.18 J	0.16 J	0.5 U	0.5 U		0.5 U	0.5 U	0.21 J	0.19 J
		MAGNESIUM	UG/L		22,200	14,800	6,890	18,900		9,880	9,980	45,500	45,400
		MANGANESE	UG/L		1,390	251	743	2 J		2.7 J	2.5 J	4.6 J	4.4 J
		MERCURY	UG/L		0.025 J	0.024 J	0.1 U	0.1 U		0.1 U	0.1 U	0.044 J	0.04 J
		NICKEL	UG/L		5.77 J	4 U	0.5 J	4 U		4 U	4 U	4 U	4 U
		POTASSIUM	UG/L		512 U	738 U	465 J	3,080		1,640	1,640	1,500	1,490
		SELENIUM	UG/L		0.42 J	0.36 J	3 U	3 U		3 U	3 U	3 U	3 U
		SILVER	UG/L		0.4 U	0.4 U	0.4 U	0.4 U		0.4 U	0.4 U	0.4 U	0.4 U
		SODIUM	UG/L		4,810	5,570	5,990	6,680		31,200	31,900	98,000	101,000
		THALLIUM	UG/L		0.47 J	0.4 U	0.4 U	0.4 U		0.4 U	0.4 U	0.4 U	0.4 U
		VANADIUM	UG/L		0.36 J	4 U	4 U	0.42 J		4 U	4 U	4 U	4 U
		ZINC	UG/L		10 U	10 U	10 U	0.73 J		5.7 J	5.7 J	1.1 J	1.3 J
Perchlorate	T	PERCHLORATE	UG/L										

Notes:

N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank

UG/L = micrograms per liter

UJ = Analyte not detected and the associated detection limits are estimat

U = Analyte not detected at the associated detection limits

J = Analyte present; the reported value may not be accurate or precise

R = Result is rejected

SVOCs = semivolatile organic compounds

VOCs = volatile organic compounds

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		WOOD-LORING-2		WOOD-LORING-2		
		Location		FIELDQC		JMW8011		MMW3402R
		Sample Date		5/23/2022		5/23/2022		5/21/2022
		Sample ID		LORNG_TB08_05232022		LORNG_JMW8011_05232022_K		LORNG_MMW3402R_05212022_K
		QC Code		TB		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	1,1,1,2-TETRACHLOROETHANE	UG/L	0.5	U			0.5	U
		1,1,1-TRICHLOROETHANE	UG/L	0.5	U			0.5	U
		1,1,2,2-TETRACHLOROETHANE	UG/L	0.5	U			0.5	U
		1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	0.5	U			0.5	U
		1,1,2-TRICHLOROETHANE	UG/L	0.5	U			0.5	U
		1,1-DICHLOROETHANE	UG/L	0.5	U			0.5	U
		1,1-DICHLOROETHENE	UG/L	0.5	U			0.5	U
		1,1-DICHLOROPROPENE	UG/L	0.5	U			0.5	U
		1,2,3-TRICHLOROBENZENE	UG/L	0.5	U			0.5	U
		1,2,3-TRICHLOROPROPANE	UG/L	0.5	U			0.5	U
		1,2,4-TRICHLOROBENZENE	UG/L	0.5	U			0.5	U
		1,2,4-TRIMETHYLBENZENE	UG/L	0.5	U			0.5	U
		1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.024	U			0.024	U
		1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.024	U			0.024	U
		1,2-DICHLOROBENZENE	UG/L	0.5	U			0.5	U
		1,2-DICHLOROETHANE	UG/L	0.5	U			0.5	U
		1,2-DICHLOROPROPANE	UG/L	0.5	U			0.5	U
		1,3,5-TRICHLOROBENZENE	UG/L	0.5	U			0.5	U
		1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	0.5	U			0.5	U
		1,3-DICHLOROBENZENE	UG/L	0.5	U			0.5	U
		1,3-DICHLOROPROPANE	UG/L	0.5	U			0.5	U
		1,4-DICHLOROBENZENE	UG/L	0.5	U			0.5	U
		2,2-DICHLOROPROPANE	UG/L	0.5	U			0.5	U
		2-CHLOROTOLUENE	UG/L	0.5	U			0.5	U
		2-HEXANONE	UG/L	2.5	U			2.5	U
		4-CHLOROTOLUENE	UG/L	0.5	U			0.5	U
		ACETONE	UG/L	2.5	U			2.5	U
		BENZENE	UG/L	0.5	U			1.5	
		BROMOBENZENE	UG/L	0.5	U			0.5	U
		BROMOCHLOROMETHANE	UG/L	0.5	U			0.5	U
		BROMODICHLOROMETHANE	UG/L	0.5	U			0.5	U
		BROMOFORM	UG/L	0.5	U			0.5	U

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

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Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011		MMW3402R
			Sample Date	5/23/2022		5/23/2022		5/21/2022
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K		LORNG_MMW3402R_05212022_K
			QC Code	TB		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	BROMOMETHANE	UG/L	1	U			1	U
		CARBON DISULFIDE	UG/L	0.5	U			0.5	U
		CARBON TETRACHLORIDE	UG/L	0.5	U			0.5	U
		CHLOROBENZENE	UG/L	0.5	U			0.5	U
		CHLOROETHANE	UG/L	1	U			1	U
		CHLOROFORM	UG/L	0.5	U			0.5	U
		CHLOROMETHANE	UG/L	1	U			1	U
		CIS-1,2-DICHLOROETHYLENE	UG/L	0.5	U			3.6	
		CIS-1,3-DICHLOROPROPENE	UG/L	0.5	U			0.5	U
		CYCLOHEXANE	UG/L	0.5	U			1.5	
		DIBROMOCHLOROMETHANE	UG/L	0.5	U			0.5	U
		DIBROMOMETHANE	UG/L	0.5	U			0.5	U
		DICHLORODIFLUOROMETHANE	UG/L	1	U			1	U
		ETHYLBENZENE	UG/L	0.5	U			0.46	J
		HEXACHLOROBUTADIENE	UG/L	0.75	U			0.75	U
		IODOMETHANE (METHYL IODIDE)	UG/L	0.5	U			0.5	U
		ISOPROPYLBENZENE (CUMENE)	UG/L	0.5	U			0.5	U
		M,P-XYLENE (SUM OF ISOMERS)	UG/L	1	U			1	U
		METHYL ACETATE	UG/L	0.75	U			0.75	U
		METHYL ETHYL KETONE (2-BUTANONE)	UG/L	2.5	U			2.5	U
		METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	2.5	U			2.5	U
		METHYLCYCLOHEXANE	UG/L	0.5	U			2.6	
		METHYLENE CHLORIDE	UG/L	1.4	J			2.5	U
		NAPHTHALENE	UG/L	0.5	U			0.5	U
		N-BUTYLBENZENE	UG/L	0.5	U			0.5	U
		N-PROPYLBENZENE	UG/L	0.5	U			0.5	U
		O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	0.5	U			0.5	U
		P-CYMENE (P-ISOPROPYLTOLUENE)	UG/L	0.5	U			0.5	U
		SEC-BUTYLBENZENE	UG/L	0.5	U			0.5	U
		STYRENE	UG/L	0.5	U			0.5	U
		T-BUTYLBENZENE	UG/L	0.5	U			0.5	U
		TERT-BUTYL METHYL ETHER	UG/L	0.5	U			0.5	U
		TETRACHLOROETHYLENE(PCE)	UG/L	0.5	U			0.5	U
		TOLUENE	UG/L	0.5	U			0.5	U

Prepared by: AKN
Date: 10/6/22
Checked by: JAR
Date: 10/20/22

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011		MMW3402R
			Sample Date	5/23/2022		5/23/2022		5/21/2022
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K		LORNG_MMW3402R_05212022_K
			QC Code	TB		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs	T	TRANS-1,2-DICHLOROETHENE	UG/L	0.5	U			0.5	U
		TRANS-1,3-DICHLOROPROPENE	UG/L	0.5	U			0.5	U
		TRICHLOROETHYLENE (TCE)	UG/L	0.5	U			1.4	
		TRICHLOROFLUOROMETHANE	UG/L	1	U			1	U
		VINYL ACETATE	UG/L	0.5	U			0.5	U
		VINYL CHLORIDE	UG/L	1	U			2.9	
SVOCs by SIM	T	1,4-DIOXANE (P-DIOXANE)	UG/L			0.17	U		
		2-METHYLNAPHTHALENE	UG/L					0.094	U
		ACENAPHTHENE	UG/L					0.094	U
		ACENAPHTHYLENE	UG/L					0.094	U
		ANTHRACENE	UG/L					0.094	U
		BENZO(A)ANTHRACENE	UG/L					0.094	U
		BENZO(A)PYRENE	UG/L					0.094	U
		BENZO(B)FLUORANTHENE	UG/L					0.094	U
		BENZO(G,H,I)PERYLENE	UG/L					0.088	J
		BENZO(K)FLUORANTHENE	UG/L					0.094	U
		CHRYSENE	UG/L					0.094	U
		DIBENZ(A,H)ANTHRACENE	UG/L					0.094	U
		FLUORANTHENE	UG/L					0.086	J
		FLUORENE	UG/L					0.15	J
		INDENO(1,2,3-C,D)PYRENE	UG/L					0.27	J
		NAPHTHALENE	UG/L					0.094	U
		PENTACHLOROPHENOL	UG/L					0.47	UJ
		PHENANTHRENE	UG/L					0.25	J
		PYRENE	UG/L					0.13	J
SVOCs	T	1,2,4-TRICHLOROBENZENE	UG/L					7.1	U
		1,2-DICHLOROBENZENE	UG/L					7.1	U
		1,2-DIPHENYLHYDRAZINE	UG/L					14	U
		1,3-DICHLOROBENZENE	UG/L					7.1	U
		1,4-DICHLOROBENZENE	UG/L					7.1	U
		1-METHYLNAPHTHALENE	UG/L					7.1	U
		2,2'-OXYBIS(1-CHLORO)PROPANE	UG/L					7.1	U
		2,3,4,6-TETRACHLOROPHENOL	UG/L					7.1	U
		2,4,5-TRICHLOROPHENOL	UG/L					18	UJ
		2,4,6-TRICHLOROPHENOL	UG/L					7.1	UJ

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Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011	MMW3402R	
			Sample Date	5/23/2022		5/23/2022	5/21/2022	
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K	LORNG_MMW3402R_05212022_K	
			QC Code	TB		N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier
SVOCs	T	2,4-DICHLOROPHENOL	UG/L				7.1	U
		2,4-DIMETHYLPHENOL	UG/L				7.1	U
		2,4-DINITROPHENOL	UG/L				18	U
		2,4-DINITROTOLUENE	UG/L				7.1	U
		2,6-DINITROTOLUENE	UG/L				7.1	U
		2-CHLORONAPHTHALENE	UG/L				7.1	U
		2-CHLOROPHENOL	UG/L				7.1	U
		2-METHYLPHENOL (O-CRESOL)	UG/L				7.1	U
		2-NITROANILINE	UG/L				18	U
		2-NITROPHENOL	UG/L				7.1	U
		3,3'-DICHLOROBENZIDINE	UG/L				7.1	U
		3-NITROANILINE	UG/L				18	U
		4,6-DINITRO-2-METHYLPHENOL	UG/L				18	U
		4-BROMOPHENYL PHENYL ETHER	UG/L				7.1	U
		4-CHLORO-3-METHYLPHENOL	UG/L				7.1	U
		4-CHLOROANILINE	UG/L				7.1	U
		4-CHLOROPHENYL PHENYL ETHER	UG/L				7.1	U
		4-NITROANILINE	UG/L				18	U
		4-NITROPHENOL	UG/L				18	U
		ANTHRACENE	UG/L				7.1	U
		BENZALDEHYDE	UG/L				7.1	U
		BENZIDINE	UG/L				35	U
		BENZOIC ACID	UG/L				18	U
		BENZYL ALCOHOL	UG/L				14	U
		BENZYL BUTYL PHTHALATE	UG/L				7.1	U
		BIPHENYL (DIPHENYL)	UG/L				7.1	U
		BIS(2-CHLOROETHOXY) METHANE	UG/L				7.1	U
		BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	UG/L				7.1	U
		BIS(2-ETHYLHEXYL) PHTHALATE	UG/L				7.1	U
		CARBAZOLE	UG/L				7.1	U
		CRESOLS, M & P	UG/L				7.1	U
		DIETHYL PHTHALATE	UG/L				7.1	U
		DIMETHYL PHTHALATE	UG/L				7.1	U

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Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011	MMW3402R	
			Sample Date	5/23/2022		5/23/2022	5/21/2022	
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K	LORNG_MMW3402R_05212022_K	
			QC Code	TB		N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier
SVOCs	T	DI-N-BUTYL PHTHALATE	UG/L				7.1	U
		DI-N-OCTYLPHTHALATE	UG/L				7.1	U
		HEXACHLOROBENZENE	UG/L				7.1	U
		HEXACHLOROBUTADIENE	UG/L				7.1	U
		HEXACHLOROCYCLOPENTADIENE	UG/L				7.1	U
		HEXACHLOROETHANE	UG/L				7.1	U
		ISOPHORONE	UG/L				7.1	U
		NITROBENZENE	UG/L				7.1	U
		N-NITROSODIMETHYLAMINE	UG/L				7.1	U
		N-NITROSODI-N-PROPYLAMINE	UG/L				7.1	U
		N-NITROSODIPHENYLAMINE	UG/L				7.1	U
		PHENOL	UG/L				7.1	U
		PYRIDINE	UG/L				35	U
PCBs	T	PCB, TOTAL	UG/L					
		PCB-1016 (AROCLOR 1016)	UG/L					
		PCB-1221 (AROCLOR 1221)	UG/L					
		PCB-1232 (AROCLOR 1232)	UG/L					
		PCB-1242 (AROCLOR 1242)	UG/L					
		PCB-1248 (AROCLOR 1248)	UG/L					
		PCB-1254 (AROCLOR 1254)	UG/L					
		PCB-1260 (AROCLOR 1260)	UG/L					
		PCB-1262 (AROCLOR 1262)	UG/L					
		PCB-1268 (AROCLOR 1268)	UG/L					
Pesticides	T	ALDRIN	UG/L					
		ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L					
		ALPHA ENDOSULFAN	UG/L					
		BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L					
		BETA ENDOSULFAN	UG/L					
		CIS-CHLORDANE	UG/L					
		DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L					
		DIELDRIN	UG/L					
		ENDOSULFAN SULFATE	UG/L					

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011		MMW3402R
			Sample Date	5/23/2022		5/23/2022		5/21/2022
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K		LORNG_MMW3402R_05212022_K
			QC Code	TB		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
Pesticides	T	ENDRIN	UG/L						
		ENDRIN ALDEHYDE	UG/L						
		ENDRIN KETONE	UG/L						
		GAMMA BHC (LINDANE)	UG/L						
		GAMMA-CHLORDANE	UG/L						
		HEPTACHLOR	UG/L						
		HEPTACHLOR EPOXIDE	UG/L						
		METHOXYCHLOR	UG/L						
		P,P'-DDD	UG/L						
		P,P'-DDE	UG/L						
		P,P'-DDT	UG/L						
		TOXAPHENE	UG/L						
Metals	D	ALUMINUM	UG/L						
		ANTIMONY	UG/L						
		ARSENIC	UG/L						
		BARIUM	UG/L						
		BERYLLIUM	UG/L						
		CADMIUM	UG/L						
		CALCIUM	UG/L						
		CHROMIUM, TOTAL	UG/L						
		COBALT	UG/L						
		COPPER	UG/L						
		IRON	UG/L						
		LEAD	UG/L						
		MAGNESIUM	UG/L						
		MANGANESE	UG/L						
		MERCURY	UG/L						
		NICKEL	UG/L						
		POTASSIUM	UG/L						
		SELENIUM	UG/L						
		SILVER	UG/L						
		SODIUM	UG/L						
		THALLIUM	UG/L						
		VANADIUM	UG/L						

Table 2 - Summary of Analytical Results

Data Usability Summary Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	WOOD-LORING-2		WOOD-LORING-2		
			Location	FIELDQC		JMW8011		MMW3402R
			Sample Date	5/23/2022		5/23/2022		5/21/2022
			Sample ID	LORNG_TB08_05232022		LORNG_JMW8011_05232022_K		LORNG_MMW3402R_05212022_K
			QC Code	TB		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals	D	ZINC	UG/L						
Metals	T	ALUMINUM	UG/L					140	J
		ANTIMONY	UG/L					0.5	U
		ARSENIC	UG/L					8	
		BARIUM	UG/L					49.6	
		BERYLLIUM	UG/L					0.5	U
		CADMIUM	UG/L					3	U
		CALCIUM	UG/L					148,000	
		CHROMIUM, TOTAL	UG/L					1.5	J
		COBALT	UG/L					1.8	J
		COPPER	UG/L					1.3	J
		IRON	UG/L					6,680	
		LEAD	UG/L					0.11	J
		MAGNESIUM	UG/L					14,200	
		MANGANESE	UG/L					6,780	
		MERCURY	UG/L					0.043	J
		NICKEL	UG/L					1.6	J
		POTASSIUM	UG/L					2,680	
		SELENIUM	UG/L					3	U
		SILVER	UG/L					0.4	U
		SODIUM	UG/L					4,300	
		THALLIUM	UG/L					0.42	U
		VANADIUM	UG/L					1.7	J
		ZINC	UG/L					10	U
Perchlorate	T	PERCHLORATE	UG/L						

Notes:

N = Normal Field Sample, FD = Field Duplicate, TB = Trip Blank

UG/L = micrograms per liter

UJ = Analyte not detected and the associated detection limits are estimat

U = Analyte not detected at the associated detection limits

J = Analyte present; the reported value may not be accurate or precise

R = Result is rejected

SVOCs = semivolatile organic compounds

VOCs = volatile organic compounds

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
200-63422	LORNG_MMW0124_05102022_E	LORNG_MMW0124_05102022FD_E	Perchlorate	PERCHLORATE (UG/L)	0.2	U	0.2	U	NC	
200-63534	LORNG_BW05007_05232022_E	LORNG_BW05007_05232022FD_E	Perchlorate	PERCHLORATE (UG/L)	0.2	U	0.2	U	NC	
FA95440	LORNG_JMW0505_05052022	LORNG_JMW0505_05052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	8.6	UJ	1.7	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	11		11.1		1	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	9		9.1		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	17.6		17.7		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	16.2		16.5		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	12.8		14.5		12	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.4		8.6		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.7	J	1.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	22.7		23.2		2	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.86	U	NC	
FA95511	LORNG_JBW7336A_05052022	LORNG_JBW7336A_05052022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	8.6	UJ	8.6	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	J	1.7	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	7.2		7.2		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.2	J	1.4	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.2		5.2		0	

Prepared by: AKN 10/6/22
Checked by: JAR 10/6/22

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95511	LORNG_JBW7336A_05052022	LORNG_JBW7336A_05052022FD	PFAS	Perfluorohexanesulfonic acid (PFHxS) (NG/L)	32.8		32.9		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.4		8.4		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	38.5		39.1		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.1		7		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.6	J	2.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	11.1		11		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.86	U	NC	
FA95583	LORNG_AA11MW01_05072022	LORNG_AA11MW01_05072022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	8.6	R	8.6	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.4	J	2.5	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3	J	3.2	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.6	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.9	J	3.1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	28.2		30.1		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.3		6.6		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	58.2		57		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.7		3.7		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6		3.6		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.8		5		4	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	4.3	U	4.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.86	U	NC	
	LORNG_JBW7737B_05062022	LORNG_JBW7737B_05062022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	1.8	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.7	U	1.8	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	1.8	U	NC	

Prepared by: AKN 10/6/22
Checked by: JAR 10/6/22

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95583	LORNG_JBW7737B_05062022	LORNG_JBW7737B_05062022FD	PFAS	N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.8	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	1.7	U	1.8	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	4.3		4.3		0	
				Perfluorobutanoic acid (PFBA) (NG/L)	7.3		7.3		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.89	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.89	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.89	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.5		3.6		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	9.3		9.3		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	53.3		53.3		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	14		13.9		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.89	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.6	J	1.6	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.86	J	0.9	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	181		185		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	12.3		12.1		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	6.8		5.9		14	
				Perfluoropentanoic acid (PFPeA) (NG/L)	13.8		13.7		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.86	U	0.89	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.89	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.89	U	NC	
	LORNG_JMW6001_05062022	LORNG_JMW6001_05062022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	1.7	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	8.6	UJ	8.6	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.1	J	3.3	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	4.3		4.5		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1	J	1.2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.86	U	0.86	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95583	LORNG_JMW6001_05062022	LORNG_JMW6001_05062022FD	PFAS	Perfluorooctanesulfonic acid (PFOS) (NG/L)	6		6.3		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.1	J	1.4	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.86	U	NC	
	LORNG_OW12001_05062022	LORNG_OW12001_05062022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	4.8	J	5.2	J	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	168		184		9	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	20.5		22.8		11	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	34	U	34	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	99.6		109		9	
				Perfluorobutanoic acid (PFBA) (NG/L)	42.9		46.8		9	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	107		123		14	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	51.3		56.2		9	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	714		704		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	236		260		10	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	4.8		5.2		8	
				Perfluorononanoic acid (PFNA) (NG/L)	3.1	J	3.5		12	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	3.1	J	3.1	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3660		4350		17	
				Perfluorooctanoic acid (PFOA) (NG/L)	105		116		10	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	124		136		9	
				Perfluoropentanoic acid (PFPeA) (NG/L)	105		116		10	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	0.86	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	0.86	U	NC	
FA95595	LORNG_JPZ0606_05092022	LORNG_JPZ0606_05092022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.7	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2.5	J	2.7	J	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.7	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.7	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	13.1	J	10	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.7	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	1.8	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	12.4		12.5		1	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95595	LORNG_JPZ0606_05092022	LORNG_JPZ0606_05092022FD	PFAS	Perfluorodecane sulfonate (PFDS) (NG/L)	0.86	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.86	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.86	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	J	1.9	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.1		4		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	37.1		37.8		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	9.7		9.7		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	J	1.9	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	4.3	UJ	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	70.7		69.9		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.8		6.9		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3	J	3.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.6		8.2		8	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	4.3	UJ	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.86	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.86	U	1	U	NC	
FA95621	LORNG_MMW0124_05102022	LORNG_MMW0124_05102022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	2	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2	U	2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	2	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	2	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	2	U	2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.9	J	4.2	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.1	J	3.3	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	7.4		8.1		9	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.7		4.9		4	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	8.5		9.2		8	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.3		8		9	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1	J	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.6		7.3		10	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1	U	1	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FA95784	LORNG_MMW0006_05172022	LORNG_MMW0006_05172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	2	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2	U	2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	2	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	2	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	2	UJ	10	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2	U	2	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.3	J	1.7	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1	U	1	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.3	J	2.2	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.4	J	1.5	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1	U	1	U	NC	
	LORNG_MMW0132_05172022	LORNG_MMW0132_05172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	2	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2	U	2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	2	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	2	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	10	UJ	10	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	U	1	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.8	J	3.1	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1	U	1	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1	U	1	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.2	J	2	J	NC	

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FA95784	LORNG_MMW0132_05172022	LORNG_MMW0132_05172022FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1	U	1	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1	U	1	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1	U	1	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.9		4.8		2	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1	U	1	U	NC	
FA95834	LORNG_OW17001_05172022	LORNG_OW17001_05172022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	2	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	2	U	2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	2	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	2	U	10	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	2	U	10	UJ	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	5.3	J	5.5	J	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.4		4.5		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	14		14		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.4		8.6		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1	U	1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	8		8.1		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.1		4.3		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.1	J	1.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	14		14.2		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1	U	1	U	NC	
FA95870	LORNG_LF2MW1_05192022	LORNG_LF2MW1_05192022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.9	U	1.9	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	10		8.6		15	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.9	U	1.9	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.9	U	1.9	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	9.3	UJ	9.3	UJ	NC	

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FA95870	LORNG_LF2MW1_05192022	LORNG_LF2MW1_05192022FD	PFAS	N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	4.8		4.5		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.93	UJ	0.93	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	7.2		7		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.93	UJ	0.93	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.93	U	0.93	U	NC	
FA95898	LORNG_BW01005_05222022	LORNG_BW01005_05222022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	3.2	J	4	J	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	262		343		27	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	5	J	5.5	J	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	2	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	2	U	2	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	18.1		20.3		11	
				Perfluorobutanoic acid (PFBA) (NG/L)	36.8		36.9		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	27.1		32.4		18	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	51.5		54.5		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	551		553		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	114		127		11	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	10.1		10.3		2	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	19.5		18.5		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	811		867		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	157		181		14	

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FA95898	LORNG_BW01005_05222022	LORNG_BW01005_05222022FD	PFAS	Perfluoropentanesulfonic acid (PFPeS) (NG/L)	30.1		33.3		10	
				Perfluoropentanoic acid (PFPeA) (NG/L)	109		120		10	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1	U	1	U	NC	
	LORNG-UNK-033_05222022	LORNG-UNK-033_05222022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.9	U	2	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	1.9	U	2	U	NC	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	1.9	U	2	U	NC	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.9	U	2	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	9.3	U	4	R	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.9	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	15.9		16		1	
				Perfluorobutanoic acid (PFBA) (NG/L)	10.3		10.3		0	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.93	U	1	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.93	U	1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.93	U	1	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	12.4		11.8		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	13.7		14.1		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	186		192		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	27.1		28		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.93	U	1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	J	2	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.93	U	1	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	266		274		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	19.3		19.8		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	25.4		26.6		5	
				Perfluoropentanoic acid (PFPeA) (NG/L)	28.6		28.9		1	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.93	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.93	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.93	U	1	U	NC	
FA95936	LORNG_BW05007_05232022	LORNG_BW05007_05232022FD	PFAS	4:2 Fluorotelomer sulfonate (4:2 FTS) (NG/L)	1.9	U	1.9	U	NC	
				6:2 Fluorotelomer sulfonate (6:2 FTS) (NG/L)	160		177		10	
				8:2 Fluorotelomer sulfonate (8:2 FTS) (NG/L)	23.1		33.8		38	
				N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) (NG/L)	1.9	U	1.9	U	NC	
				N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	38.4		41.2		7	
				Perfluorobutanoic acid (PFBA) (NG/L)	67.3		71.7		6	
				Perfluorodecane sulfonate (PFDS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.93	U	1	J	NC	

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FA95936	LORNG_BW05007_05232022	LORNG_BW05007_05232022FD	PFAS	Perfluorododecanoic acid (PFDoA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	26.3		30.6		15	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	114		123		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	422		381		10	
				Perfluorohexanoic acid (PFHxA) (NG/L)	150		162		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	21.8		25.5		16	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.3	J	4.2		58	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1640		2050		22	
				Perfluorooctanoic acid (PFOA) (NG/L)	100		110		10	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	54.5		59.1		8	
				Perfluoropentanoic acid (PFPeA) (NG/L)	239		263		10	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.93	U	0.93	U	NC	
SP2189	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,1-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/L)	0.024	U	0.024	U	NC	
					0.75	U	0.75	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/L)	0.024	U	0.024	U	NC	
					0.5	U	0.5	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				2,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				2-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				2-HEXANONE (UG/L)	2.5	U	2.5	U	NC	

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SP2189	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	VOCs	4-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				ACETONE (UG/L)	2.5	U	2.5	U	NC	
				BENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOBENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMODICHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMOFORM (UG/L)	0.5	U	0.5	U	NC	
				BROMOMETHANE (UG/L)	1	U	1	U	NC	
				CARBON DISULFIDE (UG/L)	0.5	U	0.5	U	NC	
				CARBON TETRACHLORIDE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROETHANE (UG/L)	1	U	1	U	NC	
				CHLOROFORM (UG/L)	0.5	U	0.5	U	NC	
				CHLOROMETHANE (UG/L)	1	U	1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/L)	0.26	J	0.33	J	NC	
				CIS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				CYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DICHLORODIFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				ETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	0.75	U	0.75	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/L)	0.5	U	0.5	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/L)	0.5	U	0.5	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/L)	1	U	1	U	NC	
				METHYL ACETATE (UG/L)	0.75	U	0.75	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYLCYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				METHYLENE CHLORIDE (UG/L)	2.5	U	2.5	U	NC	
				NAPHTHALENE (UG/L)	0.5	U	0.5	U	NC	
				N-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				N-PROPYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/L)	0.5	U	0.5	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/L)	0.5	U	0.5	U	NC	
				SEC-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				STYRENE (UG/L)	0.5	U	0.5	U	NC	
				T-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				TERT-BUTYL METHYL ETHER (UG/L)	0.5	U	0.5	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/L)	0.9	J	0.79	J	NC	

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SP2189	LORNG_JBW7737B_05062022_K	LORNG_JBW7737B_05062022FD_K	VOCs	TOLUENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/L)	0.83	J	0.75	J	NC	
				TRICHLOROFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				VINYL ACETATE (UG/L)	0.5	U	0.5	U	NC	
				VINYL CHLORIDE (UG/L)	1	U	1	U	NC	
SP2277	LORNG_MMW0124_05102022_K	LORNG_MMW0124_05102022FD_K	SVOCs by SIM	1,4-DIOXANE (P-DIOXANE) (UG/L)	0.17	U	0.17	U	NC	
WOOD-LORING-1	LORNG_OW17001_05172022_K	LORNG_OW17001_05172022FD_K	Metals	ALUMINUM (UG/L)	77	J	72	J	NC	
				ANTIMONY (UG/L)	0.5	U	0.5	U	NC	
				ARSENIC (UG/L)	4	U	4	U	NC	
				BARIUM (UG/L)	25.9		26		0	
				BERYLLIUM (UG/L)	0.5	U	0.5	U	NC	
				CADMIUM (UG/L)	3	U	3	U	NC	
				CALCIUM (UG/L)	59100		59900		1	
				CHROMIUM, TOTAL (UG/L)	0.58	J	0.65	J	NC	
				COBALT (UG/L)	4	U	4	U	NC	
				COPPER (UG/L)	1.1	J	0.87	J	NC	
				IRON (UG/L)	44	J	46	J	NC	
				LEAD (UG/L)	0.5	U	0.5	U	NC	
				MAGNESIUM (UG/L)	9880		9980		1	
				MANGANESE (UG/L)	2.7	J	2.5	J	NC	
				MERCURY (UG/L)	0.1	U	0.1	U	NC	
				NICKEL (UG/L)	4	U	4	U	NC	
				POTASSIUM (UG/L)	1640		1640		0	
				SELENIUM (UG/L)	3	U	3	U	NC	
				SILVER (UG/L)	0.4	U	0.4	U	NC	
				SODIUM (UG/L)	31200		31900		2	
				THALLIUM (UG/L)	0.4	U	0.4	U	NC	
				VANADIUM (UG/L)	4	U	4	U	NC	
				ZINC (UG/L)	5.7	J	5.7	J	NC	
WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	Metals	ALUMINUM (UG/L)	130	J	140	J	NC	
				ANTIMONY (UG/L)	0.579	U	0.51	U	NC	
				ARSENIC (UG/L)	4	U	4	U	NC	
				BARIUM (UG/L)	172		185		7	
				BERYLLIUM (UG/L)	0.5	U	0.5	U	NC	
				CADMIUM (UG/L)	3	U	3	U	NC	
				CALCIUM (UG/L)	120000		129000		7	
				CHROMIUM, TOTAL (UG/L)	0.98	J	1.3	J	NC	
				COBALT (UG/L)	4	U	4	U	NC	

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WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	Metals	COPPER (UG/L)	2.5	J	2.8	J	NC	
				IRON (UG/L)	47	J	49	J	NC	
				LEAD (UG/L)	0.21	J	0.19	J	NC	
				MAGNESIUM (UG/L)	45500		45400		0	
				MANGANESE (UG/L)	4.6	J	4.4	J	NC	
				MERCURY (UG/L)	0.044	J	0.04	J	NC	
				NICKEL (UG/L)	4	U	4	U	NC	
				POTASSIUM (UG/L)	1500		1490		1	
				SELENIUM (UG/L)	3	U	3	U	NC	
				SILVER (UG/L)	0.4	U	0.4	U	NC	
				SODIUM (UG/L)	98000		101000		3	
				THALLIUM (UG/L)	0.4	U	0.4	U	NC	
				VANADIUM (UG/L)	4	U	4	U	NC	
				ZINC (UG/L)	1.1	J	1.3	J	NC	
			PCBs	PCB, TOTAL (UG/L)	0.21	U	0.21	U	NC	
				PCB-1016 (AROCLOR 1016) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1221 (AROCLOR 1221) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1232 (AROCLOR 1232) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1242 (AROCLOR 1242) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1248 (AROCLOR 1248) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1254 (AROCLOR 1254) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1260 (AROCLOR 1260) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1262 (AROCLOR 1262) (UG/L)	0.023	U	0.023	U	NC	
				PCB-1268 (AROCLOR 1268) (UG/L)	0.023	U	0.023	U	NC	
	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	Pesticides	ALDRIN (UG/L)	0.0023	U	0.0023	U	NC	
				ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) (UG/L)	0.0023	U	0.0023	U	NC	
				ALPHA ENDOSULFAN (UG/L)	0.0023	U	0.0023	U	NC	
				BETA BHC (BETA HEXACHLOROCYCLOHEXANE) (UG/L)	0.0023	U	0.0023	U	NC	
				BETA ENDOSULFAN (UG/L)	0.0047	U	0.0047	U	NC	
				CIS-CHLORDANE (UG/L)	0.0023	U	0.0023	U	NC	
				DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) (UG/L)	0.0023	U	0.0023	U	NC	
				DIELDRIN (UG/L)	0.0047	U	0.0047	U	NC	
				ENDOSULFAN SULFATE (UG/L)	0.0047	U	0.0047	U	NC	
				ENDRIN (UG/L)	0.0047	U	0.0047	U	NC	
				ENDRIN ALDEHYDE (UG/L)	0.0047	U	0.0047	U	NC	
				ENDRIN KETONE (UG/L)	0.0047	U	0.0047	U	NC	
				GAMMA BHC (LINDANE) (UG/L)	0.0023	U	0.0023	U	NC	
				GAMMA-CHLORDANE (UG/L)	0.0023	U	0.0023	U	NC	
				HEPTACHLOR (UG/L)	0.0023	U	0.0023	U	NC	
				HEPTACHLOR EPOXIDE (UG/L)	0.0023	U	0.0023	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	Pesticides	METHOXYCHLOR (UG/L)	0.023	U	0.023	U	NC	
				P,P'-DDD (UG/L)	0.0047	U	0.0047	U	NC	
				P,P'-DDE (UG/L)	0.0047	U	0.0047	U	NC	
				P,P'-DDT (UG/L)	0.0047	U	0.0047	U	NC	
				TOXAPHENE (UG/L)	0.047	U	0.047	U	NC	
			SVOCs	1,2,4-TRICHLOROBENZENE (UG/L)	7	U	7	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	7	U	7	U	NC	
				1,2-DIPHENYLHYDRAZINE (UG/L)	14	U	14	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	7	U	7	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	7	U	7	U	NC	
				1-METHYLNAPHTHALENE (UG/L)	7	U	7	U	NC	
				2,2'-OXYBIS(1-CHLORO)PROPANE (UG/L)	7	U	7	U	NC	
				2,3,4,6-TETRACHLOROPHENOL (UG/L)	7	U	7	U	NC	
				2,4,5-TRICHLOROPHENOL (UG/L)	18	UJ	18	UJ	NC	
				2,4,6-TRICHLOROPHENOL (UG/L)	7	UJ	7	UJ	NC	
				2,4-DICHLOROPHENOL (UG/L)	7	U	7	U	NC	
				2,4-DIMETHYLPHENOL (UG/L)	7	U	7	U	NC	
				2,4-DINITROPHENOL (UG/L)	18	U	18	U	NC	
				2,4-DINITROTOLUENE (UG/L)	7	U	7	U	NC	
				2,6-DINITROTOLUENE (UG/L)	7	U	7	U	NC	
				2-CHLORONAPHTHALENE (UG/L)	7	U	7	U	NC	
				2-CHLOROPHENOL (UG/L)	7	U	7	U	NC	
				2-METHYLPHENOL (O-CRESOL) (UG/L)	7	U	7	U	NC	
				2-NITROANILINE (UG/L)	18	U	18	U	NC	
				2-NITROPHENOL (UG/L)	7	U	7	U	NC	
				3,3'-DICHLOROBENZIDINE (UG/L)	7	U	7	U	NC	
	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	SVOCs	3-NITROANILINE (UG/L)	18	U	18	U	NC	
				4,6-DINITRO-2-METHYLPHENOL (UG/L)	18	U	18	U	NC	
				4-BROMOPHENYL PHENYL ETHER (UG/L)	7	U	7	U	NC	
				4-CHLORO-3-METHYLPHENOL (UG/L)	7	U	7	U	NC	
				4-CHLOROANILINE (UG/L)	7	U	7	U	NC	
				4-CHLOROPHENYL PHENYL ETHER (UG/L)	7	U	7	U	NC	
				4-NITROANILINE (UG/L)	18	U	18	U	NC	
				4-NITROPHENOL (UG/L)	18	U	18	U	NC	
				ANTHRACENE (UG/L)	7	U	7	U	NC	
				BENZALDEHYDE (UG/L)	7	U	7	U	NC	
				BENZIDINE (UG/L)	35	U	35	U	NC	
				BENZOIC ACID (UG/L)	18	U	18	U	NC	
				BENZYL ALCOHOL (UG/L)	14	U	14	U	NC	
				BENZYL BUTYL PHTHALATE (UG/L)	7	U	7	U	NC	

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WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	SVOCs	BIPHENYL (DIPHENYL) (UG/L)	7	U	7	U	NC	
				BIS(2-CHLOROETHOXY) METHANE (UG/L)	7	U	7	U	NC	
				BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) (UG/L)	7	U	7	U	NC	
				BIS(2-ETHYLHEXYL) PHTHALATE (UG/L)	7	U	7	U	NC	
				CARBAZOLE (UG/L)	7	U	7	U	NC	
				CRESOLS, M & P (UG/L)	7	U	7	U	NC	
				DIETHYL PHTHALATE (UG/L)	7	U	7	U	NC	
				DIMETHYL PHTHALATE (UG/L)	7	U	7	U	NC	
				DI-N-BUTYL PHTHALATE (UG/L)	7	U	7	U	NC	
				DI-N-OCTYLPHTHALATE (UG/L)	7	U	7	U	NC	
				HEXACHLOROBENZENE (UG/L)	7	U	7	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	7	U	7	U	NC	
				HEXACHLOROCYCLOPENTADIENE (UG/L)	7	U	7	U	NC	
				HEXACHLOROETHANE (UG/L)	7	U	7	U	NC	
				ISOPHORONE (UG/L)	7	U	7	U	NC	
				NITROBENZENE (UG/L)	7	U	7	U	NC	
				N-NITROSODIMETHYLAMINE (UG/L)	7	U	7	U	NC	
				N-NITROSODI-N-PROPYLAMINE (UG/L)	7	U	7	U	NC	
				N-NITROSODIPHENYLAMINE (UG/L)	7	U	7	U	NC	
				PHENOL (UG/L)	7	U	7	U	NC	
				PYRIDINE (UG/L)	35	U	35	U	NC	
			SVOCs by SIM	2-METHYLNAPHTHALENE (UG/L)	0.093	U	0.093	U	NC	
				ACENAPHTHENE (UG/L)	0.093	U	0.093	U	NC	
				ACENAPHTHYLENE (UG/L)	0.093	U	0.093	U	NC	
				ANTHRACENE (UG/L)	0.093	U	0.093	U	NC	
				BENZO(A)ANTHRACENE (UG/L)	0.093	U	0.093	U	NC	
				BENZO(A)PYRENE (UG/L)	0.093	U	0.093	U	NC	
				BENZO(B)FLUORANTHENE (UG/L)	0.093	U	0.093	U	NC	
				BENZO(G,H,I)PERYLENE (UG/L)	0.093	U	0.093	U	NC	
				BENZO(K)FLUORANTHENE (UG/L)	0.093	U	0.093	U	NC	
				CHRYSENE (UG/L)	0.093	U	0.093	U	NC	
				DIBENZ(A,H)ANTHRACENE (UG/L)	0.093	U	0.093	U	NC	
				FLUORANTHENE (UG/L)	0.093	U	0.093	U	NC	
				FLUORENE (UG/L)	0.093	U	0.093	U	NC	
				INDENO(1,2,3-C,D)PYRENE (UG/L)	0.093	U	0.093	U	NC	
				NAPHTHALENE (UG/L)	0.093	U	0.093	U	NC	
				PENTACHLOROPHENOL (UG/L)	0.47	UJ	0.47	UJ	NC	
				PHENANTHRENE (UG/L)	0.093	U	0.093	U	NC	
				PYRENE (UG/L)	0.093	U	0.093	U	NC	

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WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	VOCs	1,1,1,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,1-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2,2-TETRACHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1,2-TRICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				1,1-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,3-TRICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2,4-TRIMETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DIBROMO-3-CHLOROPROPANE (UG/L)	0.024	U	0.024	U	NC	
					0.75	U	0.75	U	NC	
				1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) (UG/L)	0.024	U	0.024	U	NC	
					0.5	U	0.5	U	NC	
				1,2-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROETHANE (UG/L)	0.5	U	0.5	U	NC	
				1,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3,5-TRIMETHYLBENZENE (MESITYLENE) (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				1,3-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				1,4-DICHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				2,2-DICHLOROPROPANE (UG/L)	0.5	U	0.5	U	NC	
				2-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				2-HEXANONE (UG/L)	2.5	U	2.5	U	NC	
				4-CHLOROTOLUENE (UG/L)	0.5	U	0.5	U	NC	
				ACETONE (UG/L)	2.5	U	2.5	U	NC	
				BENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOBENZENE (UG/L)	0.5	U	0.5	U	NC	
				BROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMODICHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				BROMOFORM (UG/L)	0.5	U	0.5	U	NC	
				BROMOMETHANE (UG/L)	1	U	1	U	NC	
				CARBON DISULFIDE (UG/L)	0.5	U	0.5	U	NC	
				CARBON TETRACHLORIDE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROBENZENE (UG/L)	0.5	U	0.5	U	NC	
				CHLOROETHANE (UG/L)	1	U	1	U	NC	
				CHLOROFORM (UG/L)	0.5	U	0.5	U	NC	
				CHLOROMETHANE (UG/L)	1	U	1	U	NC	
				CIS-1,2-DICHLOROETHYLENE (UG/L)	0.5	U	0.5	U	NC	
				CIS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	

Prepared by: AKN 10/6/22
Checked by: JAR 10/6/22

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
WOOD-LORING-2	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	VOCs	CYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOCHLOROMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DIBROMOMETHANE (UG/L)	0.5	U	0.5	U	NC	
				DICHLORODIFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				ETHYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				HEXACHLOROBUTADIENE (UG/L)	0.75	U	0.75	U	NC	
				IODOMETHANE (METHYL IODIDE) (UG/L)	0.5	U	0.5	U	NC	
				ISOPROPYLBENZENE (CUMENE) (UG/L)	0.5	U	0.5	U	NC	
				M,P-XYLENE (SUM OF ISOMERS) (UG/L)	1	U	1	U	NC	
	LORNG_BW05007_05232022_K	LORNG_BW05007_05232022FD_K	VOCs	METHYL ACETATE (UG/L)	0.75	U	0.75	U	NC	
				METHYL ETHYL KETONE (2-BUTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) (UG/L)	2.5	U	2.5	U	NC	
				METHYLCYCLOHEXANE (UG/L)	0.5	U	0.5	U	NC	
				METHYLENE CHLORIDE (UG/L)	2.5	U	2.5	U	NC	
				NAPHTHALENE (UG/L)	0.5	U	0.5	U	NC	
				N-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				N-PROPYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				O-XYLENE (1,2-DIMETHYLBENZENE) (UG/L)	0.5	U	0.5	U	NC	
				P-CYMENE (P-ISOPROPYLTOLUENE) (UG/L)	0.5	U	0.5	U	NC	
				SEC-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				STYRENE (UG/L)	0.5	U	0.5	U	NC	
				T-BUTYLBENZENE (UG/L)	0.5	U	0.5	U	NC	
				TERT-BUTYL METHYL ETHER (UG/L)	0.5	U	0.5	U	NC	
				TETRACHLOROETHYLENE(PCE) (UG/L)	0.5	U	0.5	U	NC	
				TOLUENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,2-DICHLOROETHENE (UG/L)	0.5	U	0.5	U	NC	
				TRANS-1,3-DICHLOROPROPENE (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROETHYLENE (TCE) (UG/L)	0.5	U	0.5	U	NC	
				TRICHLOROFLUOROMETHANE (UG/L)	1	U	1	U	NC	
				VINYL ACETATE (UG/L)	0.5	U	0.5	U	NC	
				VINYL CHLORIDE (UG/L)	1	U	1	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

J = Concentration is estimated

R = Sample reuslt is considered unusable for project objectives

NC = RPD not calculated; values less than LOQ

NG/L = nanograms per liter

UG/L = micrograms per liter

RPD = relative percent difference

SDG = Sample Delivery Group

Prepared by: AKN 10/6/22
Checked by: JAR 10/6/22

Table 5 - Acronyms and Abbreviations

Data Validation and Usability Report
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Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Vista	Vista Analytical Laboratory
Wood	Wood Environment & Infrastructure Solutions, Inc.

Table 6 - Interlaboratory Comparison Assessment Summary

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Former Pease Air Force Base, Portsmouth, New Hampshire

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_JBW8003B_05232022	FA95936	2205183	4:2 Fluorotelomer sulfonate (4:2 FTS)	2	U	1.96	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	53		55.6		5
			8:2 Fluorotelomer sulfonate (8:2 FTS)	21.6		19.3		11
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	2	U	1.96	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	1.96	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	2	U	1.96	U	NC
			Perfluorobutanesulfonic acid (PFBS)	35.5		34.7		2
			Perfluorobutanoic acid (PFBA)	41.8		40.7		3
			Perfluorodecane sulfonate (PFDS)	1	U	1.96	U	NC
			Perfluorodecanoic acid (PFDA)	1	U	1.03	J	NC
			Perfluorododecanoic acid (PFDoA)	1	U	1.96	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	24		16.2		39
			Perfluoroheptanoic acid (PFHpA)	97		92.4		5
			Perfluorohexanesulfonic acid (PFHxS)	1160		1100		5
			Perfluorohexanoic acid (PFHxA)	304		320		5
			Perfluorononanesulfonic acid (PFNS)	1	U	1.96	U	NC
			Perfluorononanoic acid (PFNA)	20.7		20.2		2
			Perfluorooctane sulfonamide (PFOSA)	15.5		8		64
			Perfluorooctanesulfonic acid (PFOS)	1490		1380		8
			Perfluorooctanoic acid (PFOA)	308		267		14
			Perfluoropentanesulfonic acid (PFPeS)	46		34.6		28
			Perfluoropentanoic acid (PFPeA)	119		110		8
			Perfluorotetradecanoic acid (PFTeDA)	1	U	1.96	U	NC
			Perfluorotridecanoic acid (PFTrDA)	1	U	1.96	U	NC
			Perfluoroundecanoic acid (PFUnA)	1	U	1.96	U	NC
LORNG_JMW0406_05062022	FA95583	2205092	4:2 Fluorotelomer sulfonate (4:2 FTS)	6.9	U	2.02	U	NC
			6:2 Fluorotelomer sulfonate (6:2 FTS)	6.9	U	2.02	U	NC
			8:2 Fluorotelomer sulfonate (8:2 FTS)	6.9	U	2.02	U	NC
			N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	6.9	U	2.02	U	NC
			N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	6.9	U	2.02	U	NC
			N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	6.9	U	2.02	U	NC
			Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.88	J	NC
			Perfluorobutanoic acid (PFBA)	10.3		12.0		15
			Perfluorodecane sulfonate (PFDS)	3.4	U	2.02	U	NC
			Perfluorodecanoic acid (PFDA)	3.4	U	2.02	U	NC
			Perfluorododecanoic acid (PFDoA)	3.4	U	2.02	U	NC
			Perfluoroheptanesulfonic acid (PFHpS)	1.9	J	1.50	J	NC
			Perfluoroheptanoic acid (PFHpA)	11.5		15.2		28

Created By: JAR 10/6/22
Checked By: GTD 10/19/22

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Pease Air Force Base, Portsmouth, New Hampshire

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/kg)	Qualifier	Secondary (ug/kg)	Qualifier	RPD
LORNG_JMW0406_05062022	FA95583	2205092	Perfluorohexanesulfonic acid (PFHxS)	41.5		52.7		24
			Perfluorohexanoic acid (PFHxA)	14.5	J	20.9		NC
			Perfluorononanesulfonic acid (PFNS)	3.4	U	2.02	U	NC
			Perfluorononanoic acid (PFNA)	4.5		5.55		21
			Perfluorooctane sulfonamide (PFOSA)	3.4	U	2.02	U	NC
			Perfluorooctanesulfonic acid (PFOS)	114		125		9
			Perfluorooctanoic acid (PFOA)	14.3		17.0		17
			Perfluoropentanesulfonic acid (PFPeS)	2.4	J	2.67	J	NC
			Perfluoropentanoic acid (PFPeA)	20.9		26.7		24
			Perfluorotetradecanoic acid (PFTeDA)	3.4	U	2.02	U	NC
			Perfluorotridecanoic acid (PFTrDA)	3.4	U	2.02	U	NC
			Perfluoroundecanoic acid (PFUnA)	3.4	U	2.02	U	NC

Notes:
No data qualifiers were applied to field sample results based on split sample comparison.
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group
ug/kg = micrograms per kilogram

Created By: JAR 10/6/22
Checked By: GTD 10/19/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA95440	M537	T	FA95440-1	LORNG_JBW7339B_05052022	Perfluorooctane sulfonamide (PFOSA)	11.4	=	11.4	J	IAG	NG/L
			FA95440-4	LORNG_JMW0505_05052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
FA95511	M537	T	FA95511-14	LORNG_JBW7335B_05062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95511-2	LORNG_JBW7336A_05052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95511-3	LORNG_JBW7336A_05052022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95511-8	LORNG_JEBS-4_05052022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
FA95583	M537	T	FA95583-11	LORNG_AA11MW01_05072022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	R	RIS	NG/L
			FA95583-12	LORNG_AA11MW01_05072022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95583-5	LORNG_JMW0241A_05062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95583-6	LORNG_JMW6001_05062022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95583-7	LORNG_JMW6001_05062022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	8.6	U	8.6	UJ	RIS	NG/L
			FA95583-8	LORNG_OW10005_05062022	Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	RFL	NG/L
FA95595	M537	T	FA95595-11	LORNG_JPZ0606_05092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	13.1	J	13.1	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.3	U	4.3	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	4.3	U	4.3	UJ	RIS	NG/L
			FA95595-12	LORNG_JPZ0606_05092022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95595-8	LORNG_JPZ0686_05092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	UJ	RIS	NG/L
			FA95595-14	LORNG_OW21005_05092022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
FA95621	M537	T	FA95621-5	LORNG_JBW7326B_05102022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
					Perfluorooctanoic acid (PFOA)	4.5	=	4.5	J	MSL	NG/L
FA95784	M537	T	FA95784-1	LORNG_043-MW03_05172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95784-5	LORNG_MMW0006_05172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2	U	2	UJ	RIS	NG/L
			FA95784-6	LORNG_MMW0006_05172022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95784-7	LORNG_MMW0132_05172022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95784-8	LORNG_MMW0132_05172022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
FA95834	M537	T	FA95834-6	LORNG_JMW0880_05182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95834-7	LORNG_JMW0882_05182022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2	U	2	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1	U	1	UJ	RIS	NG/L
			FA95834-12	LORNG_OW17001_05172022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
FA95870	M537	T	FA95870-1	LORNG_AA07MW01_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	37	U	37	UJ	RIS	NG/L
			FA95870-2	LORNG_AA07MW02_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	UJ	RIS	NG/L
			FA95870-7	LORNG_CBW02_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
			FA95870-10	LORNG_JMW0602_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.6	U	9.6	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	7.3	=	7.3	J	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	3.9	=	3.9	J	RIS	NG/L

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FA95870	M537	T	FA95870-3	LORNG_JMW1565_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	21	U	21	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.1	U	1.1	UJ	RIS	NG/L
			FA95870-4	LORNG_LF2MW1_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
					Perfluorohexanoic acid (PFHxA)	0.93	U	0.93	UJ	RIS	NG/L
					Perfluoropentanoic acid (PFPeA)	0.93	U	0.93	UJ	RIS	NG/L
			FA95870-5	LORNG_LF2MW1_05192022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95870-6	LORNG_LF2MW2_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95870-11	LORNG_LF2MW3_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95870-12	LORNG_MMW0002_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2	U	2	UJ	RIS	NG/L
					N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	2	U	2	UJ	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	UJ	RIS	NG/L
			FA95870-15	LORNG_USGS-2_125_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95870-13	LORNG_USGS-2_40_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
			FA95870-14	LORNG-UNK-044_05192022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	10	U	10	UJ	RIS	NG/L
FA95898	M537	T	FA95898-3	LORNG_JMW0683_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95898-4	LORNG_JMW0941_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95898-19	LORNG_JMW0961_05212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	UJ	RIS	NG/L
			FA95898-5	LORNG_JMW0980_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	20	U	20	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1	U	1	UJ	RIS	NG/L
			FA95898-6	LORNG_JMW0982_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95898-20	LORNG_JMW0991_05212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	1.9	U	1.9	UJ	RIS	NG/L
			FA95898-22	LORNG_JMW7916_05212022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	2	U	2	UJ	RIS	NG/L
			FA95898-8	LORNG_LF3MW4_05202022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	21	U	21	R	RIS	NG/L
			FA95898-37	LORNG-UNK-033_05222022FD	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	4	U	4	R	RIS	NG/L
FA95936	M537	T	FA95936-1	LORNG_044-RW01_05232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	9.3	U	9.3	UJ	RIS	NG/L
			FA95936-4	LORNG_JBW7314_05232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	19	U	19	R	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	R	RIS	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	R	RIS	NG/L
			FA95936-5	LORNG_JMW8004B_05232022	N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	40	U	40	UJ	RIS	NG/L
SP2142	BNASIMD	T	SP2142-1	LORNG_JBW7339B_05052022_K	BENZO(A)PYRENE	0.093	UL	0.093	UJ	LCL	UG/L
	SW6020A	T	SP2142-1	LORNG_JBW7339B_05052022_K	ANTIMONY	0.44	J	1	U	LBM	UG/L
	SW8260C	T	SP2142-1	LORNG_JBW7339B_05052022_K	METHYLENE CHLORIDE	9.5		9.5	U	TBG	UG/L

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2142	SW8270D	T	SP2142-1	LORNG_JBW7339B_05052022_K	2,3,4,6-TETRACHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2,4-DIMETHYLPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					2-METHYLPHENOL (O-CRESOL)	7	UL	7	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7	UL	7	R	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					4-CHLORO-3-METHYLPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					BENZIDINE	35	UL	35	R	LCL, LCD	UG/L
					BENZOIC ACID	18	ULL	18	R	LCL, LCD	UG/L
					CRESOLS, M & P	7	UL	7	UJ	LCL, LCD	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	ULL	7	R	LCL	UG/L
					PHENOL	7	UL	7	R	LCL, LCD	UG/L
SP2161	BNASIMD	T	SP2161-1	LORNG_JBW7348_05052022_K	ANTHRACENE	0.093	UM	0.093	UJ	MSL	UG/L
					BENZO(A)PYRENE	0.093	ULMM	0.093	UJ	LCL, MSL	UG/L
					PENTACHLOROPHENOL	0.093	UM	0.093	UJ	MSL, MSD	UG/L
	SW6020A	T	SP2161-1	LORNG_JBW7348_05052022_K	ANTIMONY	0.17	J	0.5	U	LBM	UG/L
SP2161	SW8270D	T	SP2161-1	LORNG_JBW7348_05052022_K	2,3,4,6-TETRACHLOROPHENOL	7	ULM	7	R	LCL, LCD, MSL, MSD, SGL	UG/L
					2,4,5-TRICHLOROPHENOL	18	ULM	18	R	LCL, LCD, MSL, MSD, SGL	UG/L
					2,4,6-TRICHLOROPHENOL	7	ULM	7	R	LCL, LCD, MSL, MSD, SGL	UG/L
					2,4-DICHLOROPHENOL	7	ULM	7	UJ	LCL, LCD, MSL, MSD, SGL	UG/L
					2,4-DIMETHYLPHENOL	7	UL	7	UJ	LCL, LCD, SGL	UG/L
					2,4-DINITROPHENOL	18	UL	18	UJ	LCL, LCD, SGL	UG/L
					2-CHLOROPHENOL	7	ULM	7	R	LCL, LCD, MSL, MSD, SGL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7	UL	7	UJ	LCL, LCD, SGL	UG/L
					2-NITROPHENOL	7	ULM	7	R	LCL, LCD, MSL, MSD, SGL	UG/L
SP2161	SW8270D	T	SP2161-1	LORNG_JBW7348_05052022_K	4,6-DINITRO-2-METHYLPHENOL	18	UL	18	UJ	LCL,LCD, SGL	UG/L
					4-CHLORO-3-METHYLPHENOL	7	UL	7	UJ	LCL, LCD, SGL	UG/L
					4-NITROPHENOL	18	U	18	UJ	SGL	UG/L
					BENZALDEHYDE	7	UL	7	UJ	SVLL	UG/L
					BENZIDINE	35	ULMM	35	R	SVLL, LCL, LCD, MSL, MSD	UG/L
					BENZOIC ACID	18	ULLM	18	R	CCL, LCL, LCH, LCD, SGL	UG/L

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2161	SW8270D	T	SP2161-1	LORNG_JBW7348_05052022_K	BENZYL ALCOHOL	14	U	14	UJ	SGL	UG/L
					CRESOLS, M & P	7	UL	7	UJ	LCL, LCD, SGL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7	ULLMM	7	R	LCL, LCD, MSL, MSD	UG/L
					N-NITROSODIPHENYLAMINE	7	U	7	UJ	LCL	UG/L
					PHENOL	7	UL	7	R	LCL, LCD, SGL	UG/L
SP2189	BNASIMD	T	SP2189-1	LORNG_JMW0445_05082022_K	2-METHYLNAPHTHALENE	6.5		6.5	J	LCD	UG/L
					ACENAPHTHENE	0.13	J	0.13	J	LCD	UG/L
					BENZO(A)PYRENE	0.094	UL	0.094	UJ	LCL	UG/L
					NAPHTHALENE	3.1		3.1	J	LCD	UG/L
	SW6010C	D	SP2189-2	LORNG_JMW0445_05082022F	ZINC	38.1		38.1	J	SDL	UG/L
		T	SP2189-1	LORNG_JMW0445_05082022_K	ZINC	1.7	J	1.7	J	SDL	UG/L
SP2189	SW6020A	D	SP2189-2	LORNG_JMW0445_05082022F	ANTIMONY	0.42	J	1	U	LBM	UG/L
					LEAD	0.3	J	0.5	U	FBL	UG/L
		T	SP2189-1	LORNG_JMW0445_05082022_K	ANTIMONY	0.47	J	1	U	LBM	UG/L
	SW7470A	D	SP2189-2	LORNG_JMW0445_05082022F	MERCURY	0.023	J	0.1	U	FBL	UG/L
	SW8270D	T	SP2189-1	LORNG_JMW0445_05082022_K	1-METHYLNAPHTHALENE	5.4	J	5.4	J	LCD	UG/L
					2,3,4,6-TETRACHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2,4,5-TRICHLOROPHENOL	18	UL	18	R	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2,4-DIMETHYLPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DINITROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					2-METHYLPHENOL (O-CRESOL)	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					4-CHLORO-3-METHYLPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BENZIDINE	35	UL	35	R	LCL, LCD	UG/L
					BENZOIC ACID	18	ULL	18	R	LCL, LCH, LCD	UG/L
					CRESOLS, M & P	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	ULL	7.1	R	LCL	UG/L
					PHENOL	7.1	UL	7.1	R	LCL, LCD	UG/L
SP2222	BNASIMD	T	SP2222-3	LORNG_OW21005_05092022_K	BENZO(A)PYRENE	0.094	UMM	0.094	UJ	MSL	UG/L
	SW6010C	D	SP2222-7	LORNG_JBW7338B_05092022F	BARIUM	87.3		87.3	J	FBG	UG/L
					ZINC	26.2		26.2	J	FBL, SDL	UG/L

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Date:10/6/22
Checked by: JAR
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May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2222	SW6010C	D	SP2222-6	LORNG_JBW7711_05092022F	BARIUM	62.2		62.2	J	FBG	UG/L
		T	SP2222-4	LORNG_JBW7338B_05092022_K	IRON	3750	N	3750	J	MSH	UG/L
					MAGNESIUM	13900	N	13900	J	MSH	UG/L
					ZINC	1.6	J	1.6	J	SDL	UG/L
	SW6020A	D	SP2222-7	LORNG_JBW7338B_05092022F	ANTIMONY	0.578	J	0.578	U	FBL	UG/L
			SP2222-6	LORNG_JBW7711_05092022F	ANTIMONY	0.552	J	0.552	U	FBL	UG/L
SP2222	SW7470A	D	SP2222-7	LORNG_JBW7338B_05092022F	MERCURY	0.018	J	0.1	U	FBL	UG/L
			SP2222-6	LORNG_JBW7711_05092022F	MERCURY	0.018	J	0.1	U	FBL	UG/L
	SW8270D	T	SP2222-4	LORNG_JBW7338B_05092022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BENZALDEHYDE	7.1	ULL	7.1	UJ	SVLL	UG/L
					BENZYL ALCOHOL	3.9	JB	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	2.4	J	7.1	U	LBL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	UJ	LCL, LCD	UG/L
			SP2222-1	LORNG_JBW7711_05092022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BENZALDEHYDE	7.1	ULL	7.1	UJ	SVLL	UG/L
					BENZIDINE	35	U	35	UJ	SVLL, CVHL	UG/L
					BENZYL ALCOHOL	4.8	JB	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	3.6	J	7.1	U	LBL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	UJ	LCL, LCD	UG/L
			SP2222-2	LORNG_JPZ0349_05092022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BENZYL ALCOHOL	1.7	JB	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	4.1	J	7.1	U	LBL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	UJ	LCL, LCD	UG/L

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2222	SW8270D	T	SP2222-3	LORNG_OW21005_05092022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2,4-DICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-CHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					2-NITROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	2.9	J	7.1	U	LBL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	UJ	LCL, LCD	UG/L
SP2481	BNASIMD	T	SP2481-1	LORNG_JMW0683_05202022_K	ANTHRACENE	0.095	UL	0.095	UJ	LCL	UG/L
					BENZO(A)ANTHRACENE	0.095	UL	0.095	UJ	LCL	UG/L
					BENZO(B)FLUORANTHENE	0.089	JB	0.095	U	LBL	UG/L
					BENZO(K)FLUORANTHENE	0.084	JLL	0.084	J	LCL	UG/L
					PENTACHLOROPHENOL	0.47	UL	0.47	UJ	HAHL, LCL	UG/L
					PYRENE	0.085	J	0.095	U	LBL	UG/L
			SP2481-2	LORNG_OW16001_05202022_K	ANTHRACENE	0.096	UL	0.096	UJ	LCL	UG/L
					BENZO(A)ANTHRACENE	0.096	UL	0.096	UJ	LCL	UG/L
					BENZO(A)PYRENE	0.096	ULL	0.096	UJ	LCL	UG/L
					BENZO(K)FLUORANTHENE	0.096	ULL	0.096	UJ	LCL	UG/L
	SW6010C	T	SP2481-1	LORNG_JMW0683_05202022_K	POTASSIUM	512	J	512	U	LBL	UG/L
					ZINC	2.5	J	10	U	LBL	UG/L
			SP2481-2	LORNG_OW16001_05202022_K	IRON	99.8	J	99.8	U	CBL	UG/L
					POTASSIUM	738	J	738	U	CBL, LBL	UG/L
					ZINC	1.4	J	10	U	LBL	UG/L
	SW6020A	T	SP2481-1	LORNG_JMW0683_05202022_K	ANTIMONY	0.3	J	0.5	U	LBL	UG/L
			SP2481-2	LORNG_OW16001_05202022_K	ANTIMONY	0.25	J	0.5	U	LBL	UG/L
					THALLIUM	0.29	J	0.4	U	CBL, LBL	UG/L
SP2481	SW8270D	T	SP2481-1	LORNG_JMW0683_05202022_K	2,3,4,6-TETRACHLOROPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					2,4,5-TRICHLOROPHENOL	18	U	18	UJ	HAHL	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					2,4-DICHLOROPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					2,4-DIMETHYLPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					2,4-DINITROPHENOL	18	U	18	UJ	HAHL	UG/L
					2-CHLOROPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					2-METHYLPHENOL (O-CRESOL)	7.1	U	7.1	UJ	HAHL	UG/L
					2-NITROPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					4,6-DINITRO-2-METHYLPHENOL	18	U	18	UJ	HAHL	UG/L

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SP2481	SW8270D	T	SP2481-1	LORNG_JMW0683_05202022_K	4-CHLORO-3-METHYLPHENOL	7.1	U	7.1	UJ	HAHL	UG/L
					4-NITROPHENOL	18	U	18	UJ	HAHL	UG/L
					BENZALDEHYDE	7.1	UL	7.1	UJ	LCD	UG/L
					BENZOIC ACID	18	U	18	UJ	HAHL	UG/L
					BENZYL ALCOHOL	14	U	14	UJ	HAHL	UG/L
					CRESOLS, M & P	7.1	U	7.1	UJ	HAHL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.1	UL	7.1	R	LCL, LCD	UG/L
					PHENOL	7.1	U	7.1	UJ	HAHL	UG/L
			SP2481-2	LORNG_OW16001_05202022_K	BENZALDEHYDE	7.2	UL	7.2	UJ	LCD	UG/L
					BENZOIC ACID	18	U	18	UJ	SVLL	UG/L
					HEXACHLOROCYCLOPENTADIENE	7.2	UL	7.2	R	LCL, LCD	UG/L
WOOD-LORING-1	BNASIMD	T	SP2462-1	LORNG_AA07MW01_05192022_K	BENZO(G,H,I)PERYLENE	0.07	J	0.094	U	LBL	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.13	J	0.13	U	LBL	UG/L
	SW6020A	T	SP2462-1	LORNG_AA07MW01_05192022_K	ANTIMONY	0.37	J	0.5	U	LBL	UG/L
					THALLIUM	0.11	J	0.4	U	LBL	UG/L
			SP2463-1	LORNG_BW06005_05182022_K	ANTIMONY	0.52	J	0.52	U	LBL	UG/L
					THALLIUM	0.14	J	0.4	U	LBL	UG/L
			SP2463-2	LORNG_OW17001_05172022_K	ANTIMONY	0.46	J	0.5	U	LBL	UG/L
					THALLIUM	0.097	J	0.4	U	LBL	UG/L
			SP2463-3	LORNG_OW17001_05172022FD_K	ANTIMONY	0.45	J	0.5	U	LBL	UG/L
					THALLIUM	0.079	J	0.4	U	LBL	UG/L
WOOD-LORING-2	BNASIMD	T	SP2523-1	LORNG_BW05007_05232022_K	PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
			SP2523-2	LORNG_BW05007_05232022FD_K	PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
			SP2521-1	LORNG_MMW3402R_05212022_K	BENZO(G,H,I)PERYLENE	0.088	J	0.088	J	LCD	UG/L
					FLUORANTHENE	0.086	J	0.086	J	LCD	UG/L
					FLUORENE	0.15	J	0.15	J	LCD	UG/L
					INDENO(1,2,3-C,D)PYRENE	0.27	L	0.27	J	LCH, LCD	UG/L
					PENTACHLOROPHENOL	0.47	UL	0.47	UJ	LCL, LCD	UG/L
					PHENANTHRENE	0.25		0.25	J	LCD	UG/L
					PYRENE	0.13	JL	0.13	J	LCH	UG/L
	SW6020A	T	SP2523-1	LORNG_BW05007_05232022_K	ANTIMONY	0.579	J	0.579	U	LBM	UG/L
					SELENIUM	0.37	J	3	U	LBM	UG/L
					THALLIUM	0.12	J	0.4	U	LBM	UG/L
			SP2523-2	LORNG_BW05007_05232022FD_K	ANTIMONY	0.51	J	0.51	U	LBM	UG/L
					THALLIUM	0.061	J	0.4	U	LBM	UG/L

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
May 2022 Groundwater Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
WOOD-LORING-2	SW6020A	T	SP2521-1	LORNG_MMW3402R_05212022_K	ANTIMONY	0.34	J	0.5	U	LBM	UG/L
					SELENIUM	0.61	J	3	U	LBM	UG/L
					THALLIUM	0.42	J	0.42	U	LBM	UG/L
	SW8270D	T	SP2523-1	LORNG_BW05007_05232022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					BENZYL ALCOHOL	5.8	J	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	2.8	J	7	U	LBL	UG/L
			SP2523-2	LORNG_BW05007_05232022FD_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7	UL	7	UJ	LCL, LCD	UG/L
					BENZYL ALCOHOL	12	J	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	2.6	J	7	U	LBL	UG/L
			SP2521-1	LORNG_MMW3402R_05212022_K	2,4,5-TRICHLOROPHENOL	18	UL	18	UJ	LCL, LCD	UG/L
					2,4,6-TRICHLOROPHENOL	7.1	UL	7.1	UJ	LCL, LCD	UG/L
					BENZYL ALCOHOL	3.3	J	14	U	LBL	UG/L
					BIS(2-ETHYLHEXYL) PHTHALATE	1.9	J	7.1	U	LBL	UG/L

Notes:

J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
R = Sample reuslt is considered unusable for project objectives
CCL = Continuing calibration standard recovery less than lower control limit
CVHL = Continuing calibration standard recovery greater than upper control limit
IAG = Ion abundance ratio outside calculated limits
LBL = Laboratory blank contamination less than reporting limit
LBM = Laboratory blank contamination greater than reporting limit
LCD = Laboratory control sample (LCS) relative percent difference (RPD) criteria exceeded
LCH = LCS recovery greater than upper control limit
LCL = LCS recovery less than lower control limit
MSD = Matrix spike (MS)/MSD RPD criteria exceeded
MSH = MS recovery greater than upper control limit
MSL = MS recovery less than lower control limit
RIS = Extracted internal standard recovery outside control limits
SDL = Dissolved metals concentration more than twenty percent greater than total metals concentration
SGL = Surrogate recovery less than lower control limit
SVLL = Second source verification standard recovery less than lower control limit
TBG = Trip blank concentration greater than reporting limit
NG/L = nanograms per liter
UG/L = micrograms per liter

Prepared by:AKN
Date:10/6/22
Checked by: JAR
Date: 10/19/22

Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
May - November 2022 Influent/Effluent and IDW Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil and aqueous samples were collected at the Former Loring Air Force Base in Limestone, Maine, in May - November 2022 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America Laboratory in Orlando, Florida, Katahdin Analytical Services (KAS) in Scarborough, Maine, and Bureau Veritas Labs (BW Labs) in Mississauga, Ontario, Canada as summarized below.

SGS analyzed eight samples for PFAS by Method M537, liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

KAS analyzed 6 samples for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by SW846 Method 8260B or 8260C
- Semivolatile Organic Compounds (SVOCs) by SW846 Method 8270D
- Polychlorinated Biphenyls (PCBs) by SW846 Method 8082A
- Pesticides by SW846 Method 8081B
- Herbicides by SW846 8151A
- Metals by SW846 Methods 6010C and 7470A
- Total Cyanide by Method SW846 9012
- Percent Solids by SM2540G
- Waste Characterization – See Table 1

BV Labs analyzed one sample for PFAS by Method E537, solid phase extract liquid chromatography tandem mass spectrometry (SPE/LC-MS/MS) compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this Stage 1 data validation report is presented in the following table:

- Table 1 – Summary of Samples and Analytical Methods

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). Samples included in this report were validated using Stage 1 procedures. Documentation of the Stage 1 verification and validation checks is stored in the WSP project file.

Stage 1 data validation consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics (e.g., percent moisture for soils), and analytical results with associated information. The following checks are performed as applicable to the data set:

- Documentation identifies the laboratory and samples submitted for analyses (COC and electronic data check)
- Requested analytical methods verified
- Sample preparation and analysis dates are present
- Target analyte lists verified
- Laboratory data qualifiers and data qualifier definitions provided
- Requested target analyte result units are reported
- Reporting limits/sample detection limits meet project objectives in QPP
- Results below the reporting limits are identified (J qualified)
- Sampling dates and times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory including preservation, pH and temperature are documented (COC and Sample Receipt Logs)
- Sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample collection meet project requirements in the QPP

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

2.0 STAGE 1 EVALUATION

Stage 1 verification and validation checks confirmed the overall data package compliance for this data set is interpreted to meet the project objectives identified in the QPP. A summary of Stage 1 verification and validation findings for checks that identified data package compliance issues are summarized below.

Stage 1 documentation is present in lab reports and electronic data and no compliance issues were identified.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

Data Validation: Casey Cormier



March 14th, 2023

Reviewed by: Julie Ricardi



March 15, 2023

Table 1 - Summry of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
May - November 2022 Influent/Effluent and IDW Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS		VOCs		SVOCs	PCBs	Pesticides	Herbicides
						Analysis Method	E537	M537	SW8260B	SW8260C	SW8270D	SW8082A	SW8081B	SW8151A
						Fraction	T	T	T	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
C2U5539	SR_IDW	LORNG_SR_IDW_02_10182022	UBG538	10/18/2022	SD	N	25							
FA95975	SR_IDW	LORNG_SR_IDW_01_05242022	FA95975-1	5/24/2022	SD	N		25						
FA96352	IDW-EFF	LORNG_IDW-EFF_06082022	FA96352-3	6/8/2022	WD	N		25						
	IDW-INF	LORNG_IDW-INF_06082022	FA96352-4	6/8/2022	WD	N		25						
FA96727	IDW-EFF	LORNG_IDW_EFF02_06212022	FA96727-2	6/21/2022	WD	N		25						
FA97651	IDW-EFF	LORNG_IDW-EFF03_07262022	FA97651-1	7/26/2022	WD	N		25						
FA99090	IDW-EFF	LORNG_IDW-EFF04_09202022	FA99090-17	9/20/2022	WD	N		25						
SP2565	SR_IDW	LORNG_SR_IDW_01_05242022_K	SP2565-1	5/24/2022	SD	N						10		
		LORNG_SR_IDW_01_05242022T_K	SP2565-1	5/24/2022	LA	N			10		12		7	2
SP5991	SR_IDW	LORNG_SR_IDW_02_10182022_K	SP5991-1	10/18/2022	SD	N						10		
		LORNG_SR_IDW_02_10182022T_K	SP5991-1	10/18/2022	LA	N				10	12		7	2
SP6681	SR_IDW	LORNG_SR_IDW_03_11142022	SP6681-1	11/14/2022	SD	N						10		
		LORNG_SR_IDW_03_11142022T	SP6681-1	11/14/2022	LA	N				10	12		7	2
FA96352	IDW-EFF	LORNG_IDW-EFF_06082022	FA96352-3	6/8/2022	WD	N		25						
FA96352	IDW-INF	LORNG_IDW-INF_06082022	FA96352-4	6/8/2022	WD	N		25						
FA96727	IDW-EFF	LORNG_IDW_EFF02_06212022	FA96727-2	6/21/2022	WD	N		25						

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WD = Groundwater, SD = Sediment, LA= Leachate

Prepared by:AKN
Date:3/14/23
Checked by: CLC
Date: 3/14/23

Table 1 - Summry of Samples and Analytical Methods
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
May - November 2022 Influent/Effluent and IDW Sampling
Former Loring Air Force Base, Limestone, Maine

							Method Class	Metals		WetChem				
							Analysis Method	SW6010C	SW7470A	SW9012	A2540G	D297487	SW1010A	SW9030	SW9045D
							Fraction	T	T	T	T	T	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code		ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
C2U5539	SR_IDW	LORNG_SR_IDW_02_10182022	UBG538	10/18/2022	SD	N						1			
FA95975	SR_IDW	LORNG_SR_IDW_01_05242022	FA95975-1	5/24/2022	SD	N									
FA96352	IDW-EFF	LORNG_IDW-EFF_06082022	FA96352-3	6/8/2022	WD	N									
	IDW-INF	LORNG_IDW-INF_06082022	FA96352-4	6/8/2022	WD	N									
FA96727	IDW-EFF	LORNG_IDW_EFF02_06212022	FA96727-2	6/21/2022	WD	N									
FA97651	IDW-EFF	LORNG_IDW-EFF03_07262022	FA97651-1	7/26/2022	WD	N									
FA99090	IDW-EFF	LORNG_IDW-EFF04_09202022	FA99090-17	9/20/2022	WD	N									
SP2565	SR_IDW	LORNG_SR_IDW_01_05242022_K	SP2565-1	5/24/2022	SD	N				1	1		1	1	1
		LORNG_SR_IDW_01_05242022T_K	SP2565-1	5/24/2022	LA	N		7	1						
SP5991	SR_IDW	LORNG_SR_IDW_02_10182022_K	SP5991-1	10/18/2022	SD	N				1	1		1	1	1
		LORNG_SR_IDW_02_10182022T_K	SP5991-1	10/18/2022	LA	N		7	1						
SP6681	SR_IDW	LORNG_SR_IDW_03_11142022	SP6681-1	11/14/2022	SD	N				1	1		1	1	1
		LORNG_SR_IDW_03_11142022T	SP6681-1	11/14/2022	LA	N		7	1						
FA96352	IDW-EFF	LORNG_IDW-EFF_06082022	FA96352-3	6/8/2022	WD	N									
FA96352	IDW-INF	LORNG_IDW-INF_06082022	FA96352-4	6/8/2022	WD	N									
FA96727	IDW-EFF	LORNG_IDW_EFF02_06212022	FA96727-2	6/21/2022	WD	N									

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WD = Groundwater, SD = Sediment, LA= Leachate

Prepared by:AKN
Date:3/14/23
Checked by: CLC
Date: 3/14/23

Data Validation and Usability Report
Loring PFAS Remedial Investigation
October 2021 Groundwater and Surface Water Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Groundwater and surface water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in October 2021. Per- and polyfluoroalkyl substances (PFAS) samples were submitted to Vista Analytical Laboratory in El Dorado Hills, California (Vista).

Vista analyzed 39 samples for per- and polyfluoroalkyl substances (PFAS) by liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD,2019a).

Results were reported in the following Sample Delivery Groups (SDGs):

- 2110182
- 2110192
- 2110211

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) for Remedial Investigation at Former Loring Air Force Base (Wood, 2021). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CR = Ion transition ratio does not meet criteria
FDD = Field duplicate RPD criteria exceeded
MSL = Matrix spike recovery less than the lower control limit
MSD = Matrix spike RPD criteria exceeded
RIS = Extracted internal standard outside control limit

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

Non-detect results for N-methyl perfluorooctane sulfonamide (N-MeFOSA) in the following samples were qualified as rejected (R) based on extracted internal standard (EIS) percent

recoveries less than 20. Results for N-MeFOSA in these samples are considered unusable for project objectives:

LORNG-ANWR01-10222021
LORNG-ANWR01-10222021FD
LORNG-ANWR02-10222021
LORNG-BW17004-10222021
LORNG-MMW0124-10212021
LORNG-MMW3402R-10222021
LORNG-OW17001-10222021
LORNG-OW17001-10222021FD
LORNG-USFW01-10222021

Non-detect results for N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) in the following samples were qualified as rejected (R) based on EIS percent recoveries less than 20. Results for N-MeFOSAA in these samples are considered unusable for project objectives:

LORNG-MMW0001-10232021
LORNG-MMW0007B-10232021
LORNG-RES03-WH-10252021
LORNG-RES04-WH-10252021

Reporting limits for perfluorooctane sulfonamide (PFOSA) in sample LORNG-OW17001-10222021FD and perfluorotetradecanoic acid (PFTeDA) in samples LORNG-LT13A-SW-10242021 and LORNG-LT18-SW-10242021FD are considered estimated based on EIS recoveries outside of the QC acceptance criteria. No impact on data usability was identified.

Reporting limits for N-MeFOSA and N-MeFOSAA in a subset of samples are considered estimated based on EIS recoveries outside of the QC acceptance criteria. No impact on data usability was identified.

Results for PFOSA in samples LORNG-ANWR02-10222021 and LORNG-MMW3402R-10222021 are considered estimated based on EIS recoveries outside of the QC acceptance criteria. No impact on data usability was identified.

The detection of PFOSA in sample LORNG-LWELLA-10252021 is considered estimated based on matrix spike results. No impact on data usability was identified.

Results for perfluorooctanesulfonic acid (PFOS) in sample LORNG-LT18-SW-10242021 and associated field duplicate LORNG-LT18-SW-10242021FD, and PFOSA in sample LORNG-RES03-WH-10252021 and field duplicate LORNG-RES03-WH-10252021FD, are considered estimated due to differences between field duplicate results. No impact on data usability was identified.

Results for a subset of compounds in a number of samples were qualified estimated based on ion transition ratios that did not meet method criteria. All other peak identification criteria were met and signal to noise ratios were greater than 10:1. Based on professional judgment results are considered estimated and no impact to data usability was identified.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
  Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 MS/MSD

The percent recovery of PFOSA in the MS associated with sample LORNG-LWELLA-10252021 was below the associated DoD acceptance limit (-16/33). The relative percent difference (RPD) between MS and MSD recoveries for PFOSA was greater than the RPD limit of 30 (595). PFOSA was detected in sample LORNG-LWELLA-10252021 and the result was qualified as estimated (J).

2.1.2 Field Duplicates

The results for PFOS in sample LORNG-LT18-SW-10242021 and its associated field duplicate LORNG-LT18-SW-10242021FD were qualified estimated (J) based on an RPD that exceeds the project limit of 30.

The results for PFOSA in sample LORNG-RES03-WH-10252021 and its associated field duplicate LORNG-RES03-WH-10252021FD were qualified estimated (J) based on an RPD that exceeds the project limit of 30.

2.1.3 Extracted Internal Standard Recovery

The extracted internal standard (EIS) percent recoveries associated with a subset of target compounds in multiple samples were less than the lower QC acceptance limit of 50. Results for target compounds reported above the DL are considered estimated (J). Reporting limits associated with non-detected target compounds with EIS recoveries between 20 and 50 are qualified as estimated (UJ). Results for non-detected target compounds with EIS recoveries below 20 were qualified as rejected (R) and are considered unusable for project objectives.

2.1.4 Miscellaneous

The ion transition ratios were outside of the acceptance criteria for a subset of parameters in a number of samples. The laboratory qualified the affected results with "Q" and stated that all other peak identification criteria were met. Based on professional judgment the Q-qualified results were reported as estimated values (J) in the final data set.

Reference:

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Amber Jones



January 31, 2022

Reviewed by: Julie Ricardi



February 7, 2022

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Two residential samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August 2023 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. The samples were submitted to Bureau Veritas in Mississauga, Ontario, for analysis.

BV analyzed two samples for PFAS by United States Environmental Protection Agency (USEPA) Draft Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2023). Data validation levels are established based on current USEPA guidelines for staged validation of analytical data (USEPA, 2009) and USDoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on USDoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2023), and method specifications in the DoD QSM 5.4 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.4 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes are applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Based on the data review, there were no validation qualification actions required and no validation qualifiers or reason codes were applied to sample results. Final results are presented in Table 2.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS

Of the 80 individual PFAS results reported for the groundwater event, a total of zero results were qualified as rejected (R) and were interpreted to be unusable for project objectives. This represents a PFAS data completeness of 100% for the residential data set.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review

* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field/Lab Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

Reference:

WSP Environment & Infrastructure Solutions, Inc. (WSP), 2023. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; September 2023.

USDoD, 2021a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2023. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples By LC-MS/MS; EPA 821-D-23-001. July, 2023.

Data Validation: Amber Jones



October 24, 2023

Reviewed by: Julie Ricardi



October 24, 2023

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3O9427	RES07	LORNG_RES07_08152023	WSH783	8/15/2023	WP	N	40
	RES25	LORNG_RES25_08152023	WSH784	8/15/2023	WP	N	40

Notes:
N = Total
N = Normal Field Sample
WP = Potable Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:10/24/2023
Checked by: ALJ
Date: 10/24/2023

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3O9427			
			Location	RES07		RES25	
			Sample Date	8/15/2023		8/15/2023	
			Sample ID	LORNG_RES07_0815 2023		LORNG_RES25_0815 2023	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	0.84	J	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.64	J	0.5	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.4	J	0.5	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.47	J	0.5	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.7		0.19	J
		Perfluorononanoic acid (PFNA)	NG/L	0.5	U	0.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.6		0.44	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.6		0.47	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13		0.24	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.58	J	0.47	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	36		0.47	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U
		Perfluorodecane sulfonate (PFDS)	NG/L	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U
		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	NG/L	1.9	U	1.9	U
		6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NG/L	1.9	U	1.9	U
		8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NG/L	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.63	J	1.4	J
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	1	U	1	U
		N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NG/L	1	U	1	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	1	U	1	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	1	U	1	U
		N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE)	NG/L	2.5	U	2.5	U
		N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	NG/L	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3-FTCA)	NG/L	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3-FTCA)	NG/L	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3-FTCA)	NG/L	31	U	31	U

Prepared by: AKN
Date: 10/24/2023
Checked by: ALJ
Date: 10/24/2023

Table 3 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
August 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
BV	Bureau Veritas
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP Environment & Infrastructure

Data Validation and Usability Report
Loring PFAS Remedial Investigation
March 2023 Residential – Straightline Fencing Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

One residential sample was collected at the Former Loring Air Force Base in Limestone, Maine, in March 2023 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. The sample was submitted to SGS North America Laboratory in Orlando, Florida.

SGS analyzed one sample for PFAS by Method M537, liquid chromatography tandem mass spectrometry compliant with Table B-15 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.3 (USDoD, 2019a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (Wood, 2022). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 3 for PFAS (USDoD, 2020), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2018), and method specifications in the DoD QSM 5.3 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.3 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes are applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Based on the data review, there were no validation qualification actions required and no validation qualifiers or reason codes were applied to sample results. Final results are presented in Table 2.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

PFAS

Of the 25 individual PFAS results reported for the groundwater event, a total of zero results were qualified as rejected (R) and were interpreted to be unusable for project objectives. This represents a PFAS data completeness of 100% for the residential data set.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation

* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field/Lab Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

Reference:

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2022. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; April 2022.

USDoD, 2019a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.3"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2019.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2020. "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15"; Environmental Data Quality Workgroup; May 2020.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2018. Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537. EPA 910-R-18-001. November, 2018.

Data Validation: Casey Cormier



March 22, 2023

Reviewed by: Julie Ricardi



March 22, 2023

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
March 2023 Residential – Straightline Fencing Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	M537
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC3166	PWKR	LORNG_PWKR_03022023	FC3166-1	3/2/2023	WP	N	25

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analtytes reported

Prepared by:AKN
Date:3/22/23
Checked by: CLC
Date: 3/22/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
March 2023 Residential – Straightline Fencing Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	FC3166	
			Location	PWKR	
			Sample Date	3/2/2023	
			Sample ID	LORNG_PWKR_03022023	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	4:2 Fluorotelomer sulfonate (4:2 FTS)	NG/L	3.7	U
		6:2 Fluorotelomer sulfonate (6:2 FTS)	NG/L	3.7	U
		8:2 Fluorotelomer sulfonate (8:2 FTS)	NG/L	3.7	U
		N-Ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NG/L	3.7	U
		N-Methyl Perfluorooctane Sulfonamide (N-MeFOSA)	NG/L	3.7	U
		N-Methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NG/L	3.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.8	
		Perfluorobutanoic acid (PFBA)	NG/L	2.3	J
		Perfluorodecane sulfonate (PFDS)	NG/L	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.5	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.6	J
		Perfluorohexanoic acid (PFHxA)	NG/L	2.3	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	5.3	
		Perfluorooctanoic acid (PFOA)	NG/L	3.0	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.2	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U

Prepared by: AKN
Date: 3/22/23
Checked by: CLC
Date: 3/22/23

Table 3 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
March 2023 Residential – Straightline Fencing Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
Wood	Wood Environment & Infrastructure Solutions, Inc.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Groundwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, from May to July 2023 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to Bureau Veritas (BV) located in Mississauga, Ontario, Canada for analysis.

BV analyzed 295 samples for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Assessment Comparison Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2023). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries,

instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2023), and method specifications in the DoD QSM 5.4 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.4 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

CF = Ion abundance ratio not found
CFHD = Split sample RPD criteria exceeded
FBG = Field blank contamination greater than reporting limit
FBL = field blank contamination less than reporting limit
FDD = Field duplicate relative percent difference (RPD) criteria exceeded
HHL = Sampling to extraction holding time exceeded
IAG = Ion abundance ratio outside calculated limits
LBL = laboratory blank contamination less than reporting limit
LBM = laboratory blank contamination greater than method detection limit
RIS = Extracted internal standard recovery outside control limits

Duplicates of groundwater samples LORNG_JBW7339A_06142023, LORNG_JBW8003B_06142023, and LORNG_JMW0882_06152023 were sampled and sent to SGS Laboratories (SGS) in Orlando, Florida, as interlaboratory comparison assessment samples. Results reported for LORNG_JBW7339A_06142023, LORNG_JBW8003B_06142023, and LORNG_JMW0882_06152023 from SGS are included in this report in order to analyze the results of the interlaboratory comparison only and are not considered to be included in the final data set and are therefore not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

Multiple parameters in several samples in SDGs C3H0616, C3H5622, C3H5740, and C3I3214 were extracted past the extraction holding time. Results for associated target compounds are considered estimated and data usability was not impacted.

Results for perfluorooctanesulfonic acid (PFOS) in samples LORNG_BW03002_05162023 and LORNG_MMW0002_05162023 were qualified non-detect due to instrument blank contamination. Data usability was not impacted.

Results for perfluorooctanoic acid (PFOA) in samples LORNG_JBW7752_05182023 and LORNG_LF2MW3_05182023 were qualified non-detect due to instrument blank contamination. Data usability was not impacted.

The result for PFOS in sample LORNG_UNK-034_180_06062023 is considered estimated due to instrument blank contamination. Data usability was not impacted.

The result for PFOS in sample LORNG_BW03001_06072023 was qualified not detected at the reported result due to equipment and instrument blank contamination. Data usability was not impacted.

The result for PFOS in sample LORNG_BW05011D_06072023 is considered estimated with potential high bias due to equipment blank contamination. Data usability was not impacted.

The result for PFOS in sample LORNG_BW10008_06082023 is considered estimated with potential high bias due to equipment blank contamination. Data usability was not impacted.

Results for 1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) in samples LORNG_JBW7338B_06132023 and LORNG_JBW7335A_06132023 are considered estimated with potential high bias due to equipment blank contamination. Data usability was not impacted.

Results for PFOS in samples LORNG_JBW7107_06132023 and LORNG_MMW0020_150_06132023 are considered non-detected due to instrument blank contamination. Data usability was not impacted.

The result for 6:2FTS in sample LORNG_JBW7327_158_06142023 considered non-detected due to equipment blank contamination. Data usability was not impacted.

Results for perfluorooctane sulfonamide (PFOSA) in samples LORNG_JBW7327_158_06142023, LORNG_OW24001_06142023, LORNG_BW02001_06142023, and LORNG_JBW7711_06142023 were qualified non-detect due to method blank contamination. Data usability was not impacted.

The results for PFOS in sample LORNG_GC_BW002D_06152023 and 6:2FTS in samples LORNG_GC_BW002D_06152023 and LORNG_UNK-033_06152023 were qualified non-detect due to equipment blank contamination. Data usability was not impacted.

Results for 6:2FTS in samples LORNG_JBW7327_265_06192023 and LORNG_JBW7327_265_06192023FD are considered estimated with potential high bias due to equipment blank contamination. Data usability was not impacted.

Perfluorobutanesulfonic acid (PFBS) in sample LORNG_MMW0004_06202023 was qualified non-detect due to equipment blank contamination. Data usability was not impacted.

Results for PFOSA in samples LORNG_JBW7327_158_06142023 and LORNG_JBW7327_158_06142023FD are considered estimated due to a field duplicate RPD exceedance. Data usability was not impacted.

Results for several parameters in sample LORNG_LYS07007D_06142023 and LORNG_LYS07007DDUP_06142023 are considered estimated due to field duplicate RPD exceedances. Data usability was not impacted.

Results for several parameters in sample LORNG_LYS07007S_06142023 and LORNG_LYS07007SDUP_06142023 are considered estimated due to field duplicate RPD exceedances. Data usability was not impacted.

One or more extracted internal standard (EIS) recoveries in a subset of samples recovered outside of the acceptance criteria of 20-150. Results for associated target compounds are considered estimated and data usability was not impacted.

One or more transition ion ratios in multiple samples did not meet the acceptance criteria. Results for associated target compounds are considered estimated and data usability was not impacted.

One or more transition ion ratios in multiple samples were not found. Results for associated target compounds are considered estimated and data usability was not impacted.

Results for PFOS, PFBS, perfluoropentanoic acid (PFPeA), perfluorononanoic acid (PFNA), perfluoropentanesulfonic acid (PFPeS), and PFOSA in sample LORNG_JBW7339A_06142023 are considered estimated due to split sample RPD exceedances. Data usability was not impacted.

Results for PFOSA, PFBS, and PFPeA in sample LORNG_JBW8003B_06142023 are considered estimated due to split sample RPD exceedances. Data usability was not impacted.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
  Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Interlaboratory Assessment Comparison
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

Multiple parameters in the following samples were extracted past the 28-day holding time for aqueous sample extraction. Associated results in the samples were qualified as estimated (UJ/J):

LORNG_AA07MW-01_06092023	LORNG_LYS05012S_06142023
LORNG_GC_BW0002S_06082023	LORNG_LYS07007D_06142023
LORNG_BW18004_06132023	LORNG_MMW8015_06142023

LORNG_JBW7107_06132023	LORNG_LYS01007D_06142023
LORNG_JBW7327_45_06132023	LORNG_LYS01007S_06142023
LORNG_JBW7335A_06132023	LORNG_LYS07007DDUP_06142023
LORNG_JBW8004B_06132023	LORNG_LYS07007S_06142023
LORNG_MMW0020_150_06132023	LORNG_LYS07007SDUP_06142023
LORNG_MMW0020_60_06132023	LORNG_ND40IDWEFF_06152023
LORNG_MMW0132_06122023	LORNG_ND40IDWINF_06152023
LORNG_OW01004_06122023	LORNG_MMW0004_06202023
LORNG_LYS05012D_06142023	

2.1.2 QC Blanks

PFOS was detected in the instrument blank (0.226 J ng/l) associated with samples LORNG_BW03002_05162023 and LORNG_MMW0002_05162023. The detections of PFOS in samples LORNG_BW03002_05162023 and LORNG_MMW0002_05162023 were reported below the LOD and the result was qualified as not-detected (U) at the LOD.

PFOA was detected in the instrument blank (0.2111 J ng/l) associated with samples LORNG_JBW7752_05182023 and LORNG_LF2MW3_05182023. The detections of PFOA in samples LORNG_JBW7752_05182023 and LORNG_LF2MW3_05182023 were reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

PFOS was detected in the instrument blank (0.5819 J ng/l) associated with sample LORNG_UNK-034_180_06062023. The detection of PFOS in sample LORNG_UNK-034_180_06062023 was reported above the LOQ and the result was qualified as estimated with potential high bias (J+).

PFOS was detected in equipment blank LORNG_EB012_06072023 (0.58 J ng/l) and an instrument blank (0.5819 J ng/l) associated with sample LORNG_BW03001_06072023. The detection of PFOS in sample LORNG_BW03001_06072023 was reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

PFOS was detected in equipment blank LORNG_EB013_06082023 (9.9 ng/l) associated with sample LORNG_BW05011D_06072023. The detection of PFOS in sample LORNG_BW05011D_06072023 was reported above the LOQ and the result was qualified as estimated with potential high bias (J+).

PFOS was detected in equipment blank LORNG_EB014_06082023 (1.3 J ng/l) associated with sample LORNG_BW10008_06082023. The detection of PFOS in sample LORNG_BW10008_06082023 was reported above the LOQ and the result was qualified as estimated with potential high bias (J+).

6:2FTS was detected in equipment blank LORNG_EB019_06132023 (53 ng/l) associated with samples LORNG_JBW7338B_06132023 and LORNG_JBW7335A_06132023. The detections of 6:2FTS in samples LORNG_JBW7338B_06132023 and LORNG_JBW7335A_06132023 were reported above the LOQ and results were qualified as estimated with potential high bias (J+).

PFOS was detected in the instrument blank (0.9829 J ng/l) associated with samples LORNG_JBW7107_06132023 and LORNG_MMW0020_150_06132023. The detections of PFOS in samples LORNG_JBW7107_06132023 and LORNG_MMW0020_150_06132023 were reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

6:2FTS was detected in equipment blank LORNG_EB020_06142023 (0.79 J ng/l) associated with sample LORNG_JBW7327_158_06142023. The detection of 6:2FTS in sample LORNG_JBW7327_158_06142023 was reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

PFOSA was detected in the method blank (0.15 J ng/l) associated with samples LORNG_JBW7327_158_06142023, LORNG_OW24001_06142023, LORNG_BW02001_06142023, and LORNG_JBW7711_06142023. The detections of PFOSA in the associated samples were reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

PFOS (0.52 J ng/l) and 6:2FTS (1.3 J ng/l) were detected in equipment blank LORNG_EB027_06152023 associated with samples LORNG_GC_BW002D_06152023 and LORNG_UNK-033_06152023. The detection of PFOS in sample LORNG_GC_BW002D_06152023 was reported below the LOD and the result was qualified as not-detected (U) at the LOD. Detections of 6:2FTS in samples LORNG_GC_BW002D_06152023 and LORNG_UNK-033_06152023 were reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

6:2FTS was detected in equipment blank LORNG_EB028_06202023 (5.1 J ng/l) associated with sample LORNG_JBW7327_265_06192023 and associated field duplicate LORNG_JBW7327_265_06192023FD. The detections of 6:2FTS in samples LORNG_JBW7327_265_06192023 and LORNG_JBW7327_265_06192023FD were reported above the LOQ and results were qualified as estimated with potential high bias (J+).

PFBS was detected in equipment blank LORNG_EB029_06212023 (0.3 J ng/l) associated with sample LORNG_MMW0004_06202023. The detection of PFBS in sample LORNG_MMW0004_06202023 was reported below the LOQ and the result was qualified as not-detected (U) at the reported result.

2.1.3 Field Duplicates

PFOSA results in sample LORNG_JBW7327_158_06142023 and associated field duplicate LORNG_JBW7327_158_06142023FD were qualified as estimated (J) based on the field duplicate RPD (122) exceeding the project limit.

Results for several parameters in sample LORNG_LYS07007D_06142023 and associated field duplicate LORNG_LYS07007DDUP_06142023 were qualified as estimated (J) based on the field duplicate RPDs (47 - 160) exceeding the project limit.

Results for several parameters in sample LORNG_LYS07007S_06142023 and associated field duplicate LORNG_LYS07007SDUP_06142023 were qualified as estimated (J) based on the field duplicate RPDs (50 - 79) exceeding the project limit.

2.1.4 Extracted Internal Standard Recovery

One or more EIS in the following samples recovered outside of the acceptance criteria of 50-150:

LORNG_BW10007_05092023	LORNG_BW05007_06062023
LORNG_MMW3402R_05092023	LORNG_BW07003_06062023
LORNG_JPZ0606_05102023	LORNG_OW07001_06062023
LORNG_OW10005_05102023	LORNG_OW07003_06062023
LORNG_BW18009_05112023	LORNG_MMW0006_06072023
LORNG_JMW7916_05162023	LORNG_NP_BW001D_06072023
LORNG_JMW6001_05162023	LORNG_SB/OW12001_06072023
LORNG_JMW6001_05162023FD	LORNG_AA07MW-01_06092023
LORNG_OW21005_05172023	LORNG_JBW7327_158_06142023FD
LORNG_OW07002_05172023	LORNG_LYS01007S_06142023
LORNG_AA07MW-02_06052023FD	LORNG_RFW1145_35_07032023
LORNG_AA20MW-01_06062023	

2.1.5 Compound Identification and Quantitation

One or more transition ion ratios was outside of the acceptance criteria for one or more compounds for the following samples and the results were qualified as estimated (J):

LORNG_OW14004_05092023	LORNG_GC_BW001_06082023
LORNG_BW10006_05102023	LORNG_JMW0301C_06082023
LORNG_OW01003_05112023	LORNG_USMW004_06082023FD
LORNG_MMW0015_05172023	LORNG_BW18004_06132023
LORNG_JMW0982_05222023FD	LORNG_BSMW3S_06142023
LORNG_MMW0009_05232023	LORNG_JMW0880_06142023
LORNG_JBW7737A_05242023	LORNG_JBW7336A_06152023
LORNG_OW08002_05242023FD	LORNG_BW13003_06152023FD
LORNG_JBW7335B_05252023	LORNG_JMW0882_06152023FD
LORNG_BW07003_06062023	LORNG_MMW0004_06202023
LORNG_OW07001_06062023	LORNG_RFW1145_35_07032023
LORNG_OW07003_06062023	LORNG_RFW1145_75_07032023

Secondary transition ion responses were not found for one or more compounds for the following samples:

LORNG_JMW-0416B_05092023	LORNG_LF2MW2_05172023
LORNG_JMW0681_05092023	LORNG_OW02002_05172023
LORNG_JMW0682_05092023	LORNG_OW21005_05172023

LORNG_BW10006_05102023	LORNG_JBW7345B_05232023
LORNG_JMW-0602_05102023	LORNG_JBW7737B_05242023
LORNG_JMW-0602_05102023FD	LORNG_JBW7737B_05242023FD
LORNG_JMW0683_05102023	LORNG_MMW0010_05242023
LORNG_NP_OW001_05102023	LORNG_MMW0011_05242023
LORNG_UNK-044_05102023	LORNG_AA11MW-01_05242023
LORNG_JMW0445_05112023	LORNG_BW03001_06072023
LORNG_JPZ7808_05112023	LORNG_AA07MW-01_06092023
LORNG_043-MW03_05162023	LORNG_GC_BW0002S_06082023
LORNG_JMW0991_05162023	LORNG_MMW0020_150_06132023
LORNG_OW23001_05162023	LORNG_BW18004_06132023
LORNG_OW23001_05162023EFF	LORNG_LYS01007S_06142023
LORNG_BW02002_05172023	LORNG_JBW8003B_06142023
LORNG_BW07001_05172023	

Signal to noise ratios met method criteria for analyte identification using the primary transition ion and the results were qualified as estimated (J).

2.1.6 Interlaboratory Assessment Comparison

The RPDs between results for sample LORNG_JBW7339A_06142023 and its split sample exceeded the QC limit of 30 for PFOS (33), PFBS (34), PFPeA (34), PFNA (34), PFPeS (37), and PFOSA (145). The detections of PFOS, PFBS, PFPeA, PFNA, PFPeS, and PFOSA in the associated sample were qualified as estimated (J).

The RPDs between results for sample LORNG_JBW8003B_06142023 and its split sample exceeded the QC limit of 30 for PFOSA (40), PFBS (36), and PFPeA (37). The detections of PFOSA, PFBS, and PFPeA in the associated sample were qualified as estimated (J).

Reference:

WSP Environment & Infrastructure Solutions, Inc. (WSP), 2023. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; September 2023.

USDoD, 2021a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

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UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

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Data Validation: Amber Jones



December 15, 2023

Reviewed by: Julie Ricardi



February 19, 2024

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3D4165	BW05006	LORNG_BW05006_05082023	VUA663	5/8/2023	WG	N	40
	BW10007	LORNG_BW10007_05092023	VUA675	5/9/2023	WG	N	40
	BW14005	LORNG_BW14005_05092023	VUA676	5/9/2023	WG	N	40
	BW16001	LORNG_BW16001_05092023	VUA677	5/9/2023	WG	N	40
	BW17004	LORNG_BW17004_05092023	VUA678	5/9/2023	WG	N	40
	BW20002	LORNG_BW20002_05092023	VUA679	5/9/2023	WG	N	40
	JMW-0416B	LORNG_JMW-0416B_05092023	VUA680	5/9/2023	WG	N	40
	JMW0681	LORNG_JMW0681_05092023	VUA681	5/9/2023	WG	N	40
	JMW0682	LORNG_JMW0682_05092023	VUA682	5/9/2023	WG	N	40
	MMW3402R	LORNG_MMW3402R_05092023	VUA683	5/9/2023	WG	N	40
	OW10007	LORNG_OW10007_05092023	VUA664	5/9/2023	WG	N	40
	OW14004	LORNG_OW14004_05092023	VUA665	5/9/2023	WG	N	40
	OW16002	LORNG_OW16002_05092023	VUA666	5/9/2023	WG	N	40
	OW16003	LORNG_OW16003_05092023	VUA667	5/9/2023	WG	N	40
	OW20001	LORNG_OW20001_05092023	VUA668	5/9/2023	WG	N	40
	OW20002	LORNG_OW20002_05092023	VUA669	5/9/2023	WG	N	40
	OW20004	LORNG_OW20004_05082023	VUA670	5/8/2023	WG	N	40
		LORNG_OW20004_05082023FD	VUA671	5/8/2023	WG	FD	40
	OW20005	LORNG_OW20005_05082023	VUA672	5/8/2023	WG	N	40
	OW20007	LORNG_OW20007_05092023	VUA684	5/9/2023	WG	N	40
	SB/OW16001	LORNG_SB/OW16001_05082023	VUA673	5/8/2023	WG	N	40
		LORNG_SB/OW16001_05082023FD	VUA674	5/8/2023	WG	FD	40
	SB/OW17001	LORNG_SB/OW17001_05092023	VUA685	5/9/2023	WG	N	40
C3D5831	AA20MW-02	LORNG_AA20MW-02_05102023	VUJ421	5/10/2023	WG	N	40
		LORNG_AA20MW-02_05102023FD	VUJ422	5/10/2023	WG	FD	40
	BB_BW002	LORNG_BB_BW002_05102023	VUJ423	5/10/2023	WG	N	40
	BB_OW002	LORNG_BB_OW002_05102023	VUJ424	5/10/2023	WG	N	40
	BW10006	LORNG_BW10006_05102023	VUJ425	5/10/2023	WG	N	40
		LORNG_BW10006_05102023FD	VUJ426	5/10/2023	WG	FD	40
	BW16002	LORNG_BW16002_05102023	VUJ433	5/10/2023	WG	N	40
	BW17005	LORNG_BW17005_05102023	VUJ427	5/10/2023	WG	N	40
	BW18003	LORNG_BW18003_05102023	VUJ434	5/10/2023	WG	N	40
	BW18006	LORNG_BW18006_05102023	VUJ435	5/10/2023	WG	N	40
	BW20001	LORNG_BW20001_05102023	VUJ436	5/10/2023	WG	N	40
	JEBS-4	LORNG_JEBS-4_05102023	VUJ437	5/10/2023	WG	N	40
	JMW-0602	LORNG_JMW-0602_05102023	VUJ428	5/10/2023	WG	N	40
		LORNG_JMW-0602_05102023FD	VUJ429	5/10/2023	WG	FD	40
	JMW0683	LORNG_JMW0683_05102023	VUJ438	5/10/2023	WG	N	40
	JPZ0606	LORNG_JPZ0606_05102023	VUJ430	5/10/2023	WG	N	40
	NP_OW001	LORNG_NP_OW001_05102023	VUJ439	5/10/2023	WG	N	40
	OW10005	LORNG_OW10005_05102023	VUJ431	5/10/2023	WG	N	40
	OW17002	LORNG_OW17002_05102023	VUJ432	5/10/2023	WG	N	40
	OW20006	LORNG_OW20006_05102023	VUJ442	5/10/2023	WG	N	40
	UNK-044	LORNG_UNK-044_05102023	VUJ443	5/10/2023	WG	N	40

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

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Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3D9076	044-RW01	LORNG_044-RW01_05112023	VVB625	5/11/2023	WG	N	40
	BB_OW001	LORNG_BB_OW001_05112023	VVB626	5/11/2023	WG	N	40
	BW01006	LORNG_BW01006_05112023	VVB627	5/11/2023	WG	N	40
	BW05010	LORNG_BW05010_05112023	VVB635	5/11/2023	WG	N	40
	BW18009	LORNG_BW18009_05112023	VVB628	5/11/2023	WG	N	40
	BW22001	LORNG_BW22001_05112023	VVB636	5/12/2023	WG	N	40
	FIELDQC	LORNG_EB001_05112023	VVB637	5/11/2023	WQ	EB	40
		LORNG_EB002_05112023	VVB638	5/11/2023	WQ	EB	40
	JBW7710	LORNG_JBW7710_05112023	VVB639	5/12/2023	WG	N	40
	JBW8009	LORNG_JBW8009_05112023	VVB629	5/11/2023	WG	N	40
	JMW0445	LORNG_JMW0445_05112023	VVB640	5/11/2023	WG	N	40
	JMW-0505	LORNG_JMW-0505_05112023	VVB641	5/15/2023	WG	N	40
	JMW-0806	LORNG_JMW-0806_05112023	VVB630	5/11/2023	WG	N	40
	JMW7913	LORNG_JMW7913_05112023	VVB631	5/11/2023	WG	N	40
	JPZ1382	LORNG_JPZ1382_05112023	VVB642	5/12/2023	WG	N	40
	JPZ7808	LORNG_JPZ7808_05112023	VVB632	5/11/2023	WG	N	40
	LF2MW1	LORNG_LF2MW1_05112023	VVB633	5/11/2023	WG	N	40
	OW01003	LORNG_OW01003_05112023	VVB643	5/11/2023	WG	N	40
	OW20003	LORNG_OW20003_05112023	VVB634	5/11/2023	WG	N	40
	RFW1144	LORNG_RFW1144_05112023	VVB644	5/12/2023	WG	N	40
	WBGB_BW001	LORNG_WBGB_BW001_05112023	VVB645	5/11/2023	WG	N	40
C3E0530	043-MW03	LORNG_043-MW03_05162023	VVJ471	5/16/2023	WG	N	40
	JMW3102	LORNG_JMW3102_05152023	VVJ472	5/15/2023	WG	N	40
	JPZ0349	LORNG_JPZ0349_05152023	VVJ473	5/15/2023	WG	N	40
C3E2261	BW03002	LORNG_BW03002_05162023	VVT052	5/16/2023	WG	N	40
	BW09001	LORNG_BW09001_05162023	VVT058	5/16/2023	WG	N	40
	EBGB_BW001	LORNG_EBGB_BW001_05162023	VVT053	5/16/2023	WG	N	40
	EBGB_OW002	LORNG_EBGB_OW002_05162023	VVT054	5/16/2023	WG	N	40
	FIELDQC	LORNG_EB003_05162023	VWB324	5/16/2023	WQ	EB	40
	JBW7326A	LORNG_JBW7326A_05162023	VVT055	5/16/2023	WG	N	40
	JBW7326B	LORNG_JBW7326B_05162023	VVT059	5/16/2023	WG	N	40
	JMW0991	LORNG_JMW0991_05162023	VVT056	5/16/2023	WG	N	40
	JMW0992	LORNG_JMW0992_05162023	VWB300	5/16/2023	WG	N	40
	JMW6001	LORNG_JMW6001_05162023	VVT060	5/16/2023	WG	N	40
		LORNG_JMW6001_05162023FD	VVT061	5/16/2023	WG	FD	40
	JMW7916	LORNG_JMW7916_05162023	VVT057	5/16/2023	WG	N	40
	MMW0002	LORNG_MMW0002_05162023	VWB328	5/16/2023	WG	N	40
	MMW0330	LORNG_MMW0330_05162023	VWB316	5/16/2023	WG	N	40
C3E2295	OW23001	LORNG_OW23001_05162023	VVT278	5/16/2023	WG	N	40
		LORNG_OW23001_05162023EFF	VVT279	5/16/2023	WT	N	40
C3E3943	BW02002	LORNG_BW02002_05172023	VWB937	5/17/2023	WG	N	40
	BW07001	LORNG_BW07001_05172023	VWB938	5/17/2023	WG	N	40
	BW07002	LORNG_BW07002_05172023	VWB939	5/17/2023	WG	N	40
	FIELDQC	LORNG_EB004_05172023	VWB945	5/17/2023	WQ	EB	40
		LORNG_EB005_05172023	VWB946	5/17/2023	WQ	EB	40
	JMW0891	LORNG_JMW0891_05172023	VWB947	5/17/2023	WG	N	40
	LF2MW2	LORNG_LF2MW2_05172023	VWB940	5/17/2023	WG	N	40
	MMW0015	LORNG_MMW0015_05172023	VWB941	5/17/2023	WG	N	40

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					Fraction		T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
C3E3943	MMW0018B	LORNG_MMW0018B_05172023	VWB942	5/17/2023	WG	N	40
	OW02002	LORNG_OW02002_05172023	VWB948	5/17/2023	WG	N	40
	OW05004	LORNG_OW05004_05172023	VWB943	5/17/2023	WG	N	40
	OW07002	LORNG_OW07002_05172023	VWB949	5/17/2023	WG	N	40
	OW21005	LORNG_OW21005_05172023	VWB944	5/17/2023	WG	N	40
		LORNG_OW21005_05172023FD	VWB950	5/17/2023	WG	FD	40
	OW22001	LORNG_OW22001_05172023	VWB951	5/17/2023	WG	N	40
	OW22003	LORNG_OW22003_05172023	VWB952	5/17/2023	WG	N	40
C3E6183	BB_BW001	LORNG_BB_BW001_05182023	VWQ860	5/18/2023	WG	N	40
	BW05008	LORNG_BW05008_05182023	VWQ996	5/18/2023	WG	N	40
	BW06008	LORNG_BW06008_05182023	VWQ861	5/18/2023	WG	N	40
	BW18007	LORNG_BW18007_05182023	VWQ862	5/18/2023	WG	N	40
	BW18008	LORNG_BW18008_05182023	VWQ997	5/18/2023	WG	N	40
	FIELDQC	LORNG_EB006_05182023	VWQ998	5/18/2023	WQ	EB	40
		LORNG_EB007_05182023	VWQ999	5/18/2023	WQ	EB	40
	JBW7752	LORNG_JBW7752_05182023	VWR000	5/19/2023	WG	N	40
	JMW-0241A	LORNG_JMW-0241A_05182023	VWQ863	5/18/2023	WG	N	40
	JMW0961	LORNG_JMW0961_05182023	VWQ864	5/18/2023	WG	N	40
	JMW1665	LORNG_JMW1665_05182023	VWQ865	5/18/2023	WG	N	40
	JMW1981	LORNG_JMW1981_05182023	VWR001	5/19/2023	WG	N	40
	JPZ0686	LORNG_JPZ0686_05182023	VWR002	5/19/2023	WG	N	40
	LF2MW3	LORNG_LF2MW3_05182023	VWQ866	5/18/2023	WG	N	40
	LF3MW3	LORNG_LF3MW3_05182023	VWQ867	5/18/2023	WG	N	40
		LORNG_LF3MW3_05182023FD	VWQ868	5/18/2023	WG	FD	40
	LF3MW4	LORNG_LF3MW4_05182023	VWQ869	5/18/2023	WG	N	40
	OW09001	LORNG_OW09001_05182023	VWQ870	5/18/2023	WG	N	40
		LORNG_OW09001_05182023FD	VWQ871	5/18/2023	WG	FD	40
	RFW-38	LORNG_RFW-38_05182023	VWR003	5/18/2023	WG	N	40
C3E9046	BW13001	LORNG_BW13001_05232023	VXG597	5/23/2023	WG	N	40
	FIELDQC	LORNG_EB008_05232023	VXG609	5/23/2023	WQ	EB	40
	JBW7203A	LORNG_JBW7203A_05232023	VXG585	5/23/2023	WG	N	40
	JBW7203B	LORNG_JBW7203B_05232023	VXG598	5/23/2023	WG	N	40
	JBW7345B	LORNG_JBW7345B_05232023	VXG586	5/23/2023	WG	N	40
		LORNG_JBW7347B_05222023	VXG587	5/22/2023	WG	N	40
		LORNG_JBW7347B_05222023FD	VXG588	5/22/2023	WG	FD	40
	JBW7350	LORNG_JBW7350_05232023	VXG589	5/23/2023	WG	N	40
		LORNG_JBW7350_05232023FD	VXG590	5/23/2023	WG	FD	40
	JBW7734	LORNG_JBW7734_05232023	VXG599	5/23/2023	WG	N	40
		LORNG_JBW7734_05232023FD	VXG600	5/23/2023	WG	FD	40
	JBW7738A	LORNG_JBW7738A_05232023	VXG601	5/23/2023	WG	N	40
	JBW7738B	LORNG_JBW7738B_05232023	VXG602	5/23/2023	WG	N	40
	JMW-0406	LORNG_JMW-0406_05232023	VXG603	5/23/2023	WG	N	40
	JMW-0603	LORNG_JMW-0603_05232023	VXG604	5/23/2023	WG	N	40
	JMW0982	LORNG_JMW0982_05222023	VXG591	5/22/2023	WG	N	40
		LORNG_JMW0982_05222023FD	VXG592	5/22/2023	WG	FD	40
	JMW1684	LORNG_JMW1684_05222023	VXG593	5/22/2023	WG	N	40
		LORNG_JMW1684_05222023FD	VXG594	5/22/2023	WG	FD	40
	JMW1762	LORNG_JMW1762_05222023	VXG595	5/22/2023	WG	N	40

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					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3E9046	JPZ1780	LORNG_JPZ1780_05232023	VXG610	5/23/2023	WG	N	40
	MMW0009	LORNG_MMW0009_05232023	VXG596	5/23/2023	WG	N	40
	MMW0422	LORNG_MMW0422_05232023	VXG605	5/23/2023	WG	N	40
	MMW0423	LORNG_MMW0423_05232023	VXG606	5/23/2023	WG	N	40
	RFW1147	LORNG_RFW1147_05232023	VXG607	5/23/2023	WG	N	40
	USGS2	LORNG_USGS2_125_05232023	VXG611	5/23/2023	WG	N	40
		LORNG_USGS2_40_05232023	VXG608	5/23/2023	WG	N	40
C3F0921	AA11MW-01	LORNG_AA11MW-01_05242023	VXR237	5/24/2023	WG	N	40
	AA11MW-02	LORNG_AA11MW-02_05242023	VXR238	5/24/2023	WG	N	40
	AA18MW-01	LORNG_AA18MW-01_05242023	VXR225	5/24/2023	WG	N	40
	BW01007	LORNG_BWO1007_05242023	VXR239	5/24/2023	WG	N	40
	BW06005	LORNG_BWO6005_05242023	VXR226	5/24/2023	WG	N	40
	BW12006	LORNG_BW12006_05242023	VXR240	5/24/2023	WG	N	40
	BW17006	LORNG_BW17006_05242023	VXR227	5/24/2023	WG	N	40
	FIELDQC	LORNG_EB009_05242023	VXR241	5/24/2023	WQ	EB	40
	JBW7314	LORNG_JBW7314_05242023	VXR242	5/24/2023	WG	N	40
	JBW7737A	LORNG_JBW7737A_05242023	VXR228	5/24/2023	WG	N	40
		LORNG_JBW7737A_05242023FD	VXR229	5/24/2023	WG	FD	40
	JBW7737B	LORNG_JBW7737B_05242023	VXR230	5/24/2023	WG	N	40
		LORNG_JBW7737B_05242023FD	VXR231	5/24/2023	WG	FD	40
	JBW7753A	LORNG_JBW7753A_05242023	VXR243	5/24/2023	WG	N	40
	MMW0007A	LORNG_MMW0007A_05242023	VXR244	5/24/2023	WG	N	40
		LORNG_MMW0007A_05242023FD	VXR245	5/24/2023	WG	FD	40
	MMW0007B	LORNG_MMW0007B_05242023	VXR246	5/24/2023	WG	N	40
	MMW0010	LORNG_MMW0010_05242023	VXR232	5/24/2023	WG	N	40
		LORNG_MMW0010_05242023FD	VXR233	5/24/2023	WG	FD	40
	MMW0011	LORNG_MMW0011_05242023	VXR234	5/24/2023	WG	N	40
	OW08002	LORNG_OW08002_05242023	VXR235	5/24/2023	WG	N	40
		LORNG_OW08002_05242023FD	VXR236	5/24/2023	WG	FD	40
C3F2062	BW01009	LORNG_BW01009_05252023	VXX528	5/25/2023	WG	N	40
	JBW7316	LORNG_JBW7316_05252023	VXX540	5/25/2023	WG	N	40
	JBW7335B	LORNG_JBW7335B_05252023	VXX529	5/25/2023	WG	N	40
	JBW7341B	LORNG_JBW7341B_05252023	VXX530	5/25/2023	WG	N	40
	JMW1565	LORNG_JMW1565_05252023	VXX531	5/25/2023	WG	N	40
	JMW1960	LORNG_JMW1960_05252023	VXX532	5/25/2023	WG	N	40
	JMW1982	LORNG_JMW1982_05252023	VXX533	5/25/2023	WG	N	40
	JPZ7704	LORNG_JPZ7704_05252023	VXX534	5/25/2023	WG	N	40
	MMW0017	LORNG_MMW0017_05252023	VXX535	5/25/2023	WG	N	40
	MMW0124	LORNG_MMW0124_05252023	VXX541	5/25/2023	WG	N	40
	OW05003	LORNG_OW05003_05252023	VXX536	5/25/2023	WG	N	40
		LORNG_OW05003_05252023FD	VXX542	5/25/2023	WG	FD	40
	OW08001	LORNG_OW08001_05252023	VXX543	5/25/2023	WG	N	40
	OW12002	LORNG_OW12002_05252023	VXX537	5/25/2023	WG	N	40
	USMW025	LORNG_USMW025_05252023	VXX538	5/25/2023	WG	N	40
		LORNG_USMW025_05252023FD	VXX539	5/25/2023	WG	FD	40
C3G5758	AA07MW-02	LORNG_AA07MW-02_06052023	WAU104	6/5/2023	WG	N	40
		LORNG_AA07MW-02_06052023FD	WAU105	6/5/2023	WG	FD	40
	AA20MW-01	LORNG_AA20MW-01_06062023	WAU106	6/6/2023	WG	N	40

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					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3G5758	BW05007	LORNG_BW05007_06062023	WAU107	6/6/2023	WG	N	40
	BW06007	LORNG_BW06007_06062023	WAU239	6/6/2023	WG	N	40
		LORNG_BW06007_06062023FD	WAU240	6/6/2023	WG	FD	40
	BW07003	LORNG_BW07003_06062023	WAU241	6/6/2023	WG	N	40
	BW08003	LORNG_BW08003_06062023	WAU108	6/6/2023	WG	N	40
	FIELDQC	LORNG_EB010_06062023	WAU242	6/6/2023	WQ	EB	40
	JBW7403	LORNG_JBW7403_06062023	WAU243	6/6/2023	WG	N	40
	JBW7614	LORNG_JBW7614_06052023	WAU109	6/5/2023	WG	N	40
	JMW3501	LORNG_JMW3501_06062023	WAU110	6/6/2023	WG	N	40
	JMW7322	LORNG_JMW7322_06052023	WAU111	6/5/2023	WG	N	40
	JPZ0342	LORNG_JPZ0342_06062023	WAU112	6/6/2023	WG	N	40
	JPZ0348	LORNG_JPZ0348_06062023	WAU244	6/6/2023	WG	N	40
	MMW0326	LORNG_MMW0326_06052023/MS/MSD	WAU113	6/5/2023	WG	N	40
	OW05002	LORNG_OW05002_06062023	WAU245	6/6/2023	WG	N	40
		LORNG_OW05002_06062023FD	WAU246	6/6/2023	WG	FD	40
	OW07001	LORNG_OW07001_06062023	WAU247	6/6/2023	WG	N	40
	OW07003	LORNG_OW07003_06062023	WAU248	6/6/2023	WG	N	40
	UNK-034	LORNG_UNK-034_180_06062023	WAU249	6/6/2023	WG	N	40
		LORNG_UNK-034_80_06062023	WAU250	6/6/2023	WG	N	40
C3G7006	BW03001	LORNG_BW03001_06072023	WBB332	6/7/2023	WG	N	40
	BW05009	LORNG_BW05009_06072023	WBB333	6/7/2023	WG	N	40
	BW05011D	LORNG_BW05011D_06072023	WBB344	6/7/2023	WG	N	40
	BW05011S	LORNG_BW05011S_06072023	WBB334	6/7/2023	WG	N	40
	BW12005	LORNG_BW12005_06072023	WBB335	6/7/2023	WG	N	40
	BW13002	LORNG_BW13002_06072023	WBB336	6/7/2023	WG	N	40
	FIELDQC	LORNG_EB011_06072023	WBB345	6/7/2023	WQ	EB	40
		LORNG_EB012_06072023	WBB346	6/7/2023	WQ	EB	40
	FMW3410	LORNG_FMW3410_06072023	WBB337	6/7/2023	WG	N	40
	JBW7714	LORNG_JBW7714_06072023	WBB338	6/7/2023	WG	N	40
	JMW0941	LORNG_JMW0941_06072023	WBB339	6/7/2023	WG	N	40
	MMW0006	LORNG_MMW0006_06072023	WBB340	6/7/2023	WG	N	40
	NP_BW001D	LORNG_NP_BW001D_06072023	WBB341	6/7/2023	WG	N	40
	NP_BW001S	LORNG_NP_BW001S_06072023	WBB347	6/7/2023	WG	N	40
	SB/OW12001	LORNG_SB/OW12001_06072023	WBB342	6/7/2023	WG	N	40
	UNK-034	LORNG_UNK-034_280_06072023	WBB343	6/7/2023	WG	N	40
C3H0616	AA07MW-01	LORNG_AA07MW-01_06092023	WBV438	6/9/2023	WG	N	40
		LORNG_AA07MW-01_06092023EFF	WBV439	6/9/2023	WG	N	40
	ASMW101	LORNG_ASMW101_06092023	WBV440	6/9/2023	WG	N	40
	BW10008	LORNG_BW10008_06082023	WBV418	6/8/2023	WG	N	40
	BW18010	LORNG_BW18010_06082023	WBV430	6/8/2023	WG	N	40
	EBGB_BW002	LORNG_EBGB_BW002_06082023	WBV420	6/8/2023	WG	N	40
	FIELDQC	LORNG_EB013_06082023	WBV419	6/8/2023	WQ	EB	40
		LORNG_EB014_06082023	WBV431	6/8/2023	WQ	EB	40
		LORNG_EB015_06082023	WBV432	6/8/2023	WQ	EB	40
	GC_BW001	LORNG_GC_BW001_06082023	WBV421	6/8/2023	WG	N	40
	GC_BW002S	LORNG_GC_BW0002S_06082023	WBV422	6/8/2023	WG	N	40
	JBW7215B	LORNG_JBW7215B_06082023	WBV433	6/8/2023	WG	N	40
	JBW7305	LORNG_JBW7305_33_06082023	WBV423	6/8/2023	WG	N	40

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
C3H0616	JMW0301C	LORNG_JMW0301C_06082023	WBV424	6/8/2023	WG	N	40
	JMW3601	LORNG_JMW3601_06082023	WBV425	6/8/2023	WG	N	40
	UNK-036	LORNG_UNK-036_06092023	WBV441	6/9/2023	WG	N	40
	UNK-042	LORNG_UNK-042_06092023	WBV434	6/9/2023	WG	N	40
	UNK-23001	LORNG_UNK-23001_06082023	WBV426	6/8/2023	WG	N	40
	USMW004	LORNG_USMW004_06082023	WBV435	6/8/2023	WG	N	40
		LORNG_USMW004_06082023FD	WBV436	6/8/2023	WG	FD	40
	USMW013	LORNG_USMW013_06082023	WBV427	6/8/2023	WG	N	40
	USMW015	LORNG_USMW015_06082023	WBV428	6/8/2023	WG	N	40
	USMW019	LORNG_USMW019_06082023	WBV437	6/8/2023	WG	N	40
	USMW024	LORNG_USMW024_06082023	WBV429	6/8/2023	WG	N	40
C3H5622	BW01005	LORNG_BW01005_06132023	WCV975	6/13/2023	WG	N	40
	BW18004	LORNG_BW18004_06132023	WCV976	6/13/2023	WG	N	40
	FIELDQC	LORNG_EB016_06132023	WCV977	6/13/2023	WQ	EB	40
		LORNG_EB017_06132023	WCV978	6/13/2023	WQ	EB	40
		LORNG_EB018_06132023	WCV979	6/13/2023	WQ	EB	40
		LORNG_EB019_06132023	WCV980	6/13/2023	WQ	EB	40
	JBW7107	LORNG_JBW7107_06132023	WCV965	6/13/2023	WG	N	40
	JBW7304	LORNG_JBW7304_06132023	WCV981	6/13/2023	WG	N	40
	JBW7305	LORNG_JBW7305_107_06132023	WCV982	6/13/2023	WG	N	40
	JBW7327	LORNG_JBW7327_45_06132023	WCV966	6/13/2023	WG	N	40
	JBW7335A	LORNG_JBW7335A_06132023	WCV967	6/13/2023	WG	N	40
	JBW7338B	LORNG_JBW7338B_06132023	WCV983	6/13/2023	WG	N	40
	JBW8004B	LORNG_JBW8004B_06132023	WCV968	6/13/2023	WG	N	40
	JMW8011	LORNG_JMW8011_06132023	WCV969	6/13/2023	WG	N	40
	MMW0020	LORNG_MMW0020_150_06132023	WCV970	6/13/2023	WG	N	40
		LORNG_MMW0020_60_06132023	WCV971	6/13/2023	WG	N	40
		LORNG_MMW0020_60_06132023FD	WCV972	6/13/2023	WG	FD	40
	MMW0132	LORNG_MMW0132_06122023	WCV973	6/12/2023	WG	N	40
	OW01002	LORNG_OW01002_06132023	WCV984	6/13/2023	WG	N	40
	OW01004	LORNG_OW01004_06122023	WCV974	6/12/2023	WG	N	40
C3H5740	BSMW3S	LORNG_BSMW3S_06142023	WCW598	6/14/2023	WG	N	40
	BW02001	LORNG_BW02001_06142023	WCW606	6/14/2023	WG	N	40
	BW06006	LORNG_BW06006_06142023	WCW607	6/14/2023	WG	N	40
	CBW02	LORNG_CBW02_06142023	WCW599	6/14/2023	WG	N	40
	FIELDQC	LORNG_EB020_06142023	WCW608	6/14/2023	WQ	EB	40
		LORNG_EB021_06142023	WCW609	6/14/2023	WQ	EB	40
		LORNG_EB022_06142023	WCW616	6/14/2023	WQ	EB	40
		LORNG_EB023_06142023	WCW617	6/14/2023	WQ	EB	40
	IDW-EFF	LORNG_ND40IDWEFF_06152023	WCW623	6/15/2023	WT	N	40
	IDW-INF	LORNG_ND40IDWINF_06152023	WCW624	6/15/2023	WT	N	40
	JBW7327	LORNG_JBW7327_158_06142023	WCW600	6/14/2023	WG	N	40
		LORNG_JBW7327_158_06142023FD	WCW601	6/14/2023	WG	FD	40
	JBW7339A	LORNG_JBW7339A_06142023	WCW602	6/14/2023	WG	N	40
	JBW7339B	LORNG_JBW7339B_06142023	WCW603	6/14/2023	WG	N	40
	JBW7711	LORNG_JBW7711_06142023	WCW610	6/14/2023	WG	N	40
	JBW8003B	LORNG_JBW8003B_06142023	WCW604	6/14/2023	WG	N	40
	JMW0880	LORNG_JMW0880_06142023	WCW611	6/14/2023	WG	N	40

Prepared by:AKN
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Checked by: ALJ
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Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
C3H5740	LYS01007D	LORNG_LYS01007D_06142023	WCW618	6/14/2023	WI	N	40
	LYS01007S	LORNG_LYS01007S_06142023	WCW619	6/14/2023	WI	N	40
	LYS05012D	LORNG_LYS05012D_06142023	WCW612	6/14/2023	WI	N	40
	LYS05012S	LORNG_LYS05012S_06142023	WCW613	6/14/2023	WI	N	40
	LYS07007D	LORNG_LYS07007D_06142023	WCW614	6/14/2023	WI	N	40
	LYS07007DDUP	LORNG_LYS07007DDUP_06142023	WCW620	6/14/2023	WI	N	40
	LYS07007S	LORNG_LYS07007S_06142023	WCW621	6/14/2023	WI	N	40
	LYS07007SDUP	LORNG_LYS07007SDUP_06142023	WCW622	6/14/2023	WI	N	40
	MMW8015	LORNG_MMW8015_06142023	WCW615	6/14/2023	WG	N	40
	OW24001	LORNG_OW24001_06142023	WCW605	6/14/2023	WG	N	40
C3H9763	AA18MW-02	LORNG_AA18MW-02_06152023	WDS689	6/15/2023	WG	N	40
	BW01008	LORNG_BW01008_06152023	WDS679	6/15/2023	WG	N	40
		LORNG_BW01008_06152023FD	WDS680	6/15/2023	WG	FD	40
	BW13003	LORNG_BW13003_06152023	WDS690	6/15/2023	WG	N	40
		LORNG_BW13003_06152023FD	WDS691	6/15/2023	WG	FD	40
	FIELDQC	LORNG_EB024_06152023	WDS692	6/15/2023	WQ	EB	40
		LORNG_EB025_06152023	WDS693	6/15/2023	WQ	EB	40
		LORNG_EB026_06152023	WDS694	6/15/2023	WQ	EB	40
		LORNG_EB027_06152023	WDS695	6/15/2023	WQ	EB	40
	FMW3413	LORNG_FMW3413_06152023	WDS681	6/15/2023	WG	N	40
	GC_BW002D	LORNG_GC_BW002D_06152023	WDS696	6/15/2023	WG	N	40
	JBW7105	LORNG_JBW7105_06152023	WDS682	6/15/2023	WG	N	40
		LORNG_JBW7105_06152023FD	WDS683	6/15/2023	WG	FD	40
	JBW7336A	LORNG_JBW7336A_06152023	WDS684	6/15/2023	WG	N	40
	JBW7912	LORNG_JBW7912_150_06152023	WDS697	6/15/2023	WG	N	40
		LORNG_JBW7912_40_06152023	WDS685	6/15/2023	WG	N	40
	JMW0882	LORNG_JMW0882_06152023	WDS698	6/15/2023	WG	N	40
		LORNG_JMW0882_06152023FD	WDS699	6/15/2023	WG	FD	40
	JMW0980	LORNG_JMW0980_06152023	WDS686	6/15/2023	WG	N	40
	OW17003	LORNG_OW17003_06152023	WDS687	6/15/2023	WG	N	40
	UNK-033	LORNG_UNK-033_06152023	WDS688	6/15/2023	WG	N	40
C3I3214	FIELDQC	LORNG_EB028_06202023	WEL012	6/20/2023	WQ	EB	40
		LORNG_EB029_06212023	WEL013	6/21/2023	WQ	EB	40
		LORNG_EB030_06212023	WEL014	6/21/2023	WQ	EB	40
	JBW7327	LORNG_JBW7327_265_06192023	WEL015	6/19/2023	WG	N	40
		LORNG_JBW7327_265_06192023FD	WEL016	6/19/2023	WG	FD	40
	JBW7348	LORNG_JBW7348_06212023	WEL017	6/21/2023	WG	N	40
		LORNG_JBW7348_06212023FD	WEL018	6/21/2023	WG	FD	40
	MMW0004	LORNG_MMW0004_06202023	WEL019	6/20/2023	WG	N	40
C3J8311	FIELDQC	LORNG_EB031_07032023	WHO075	7/3/2023	WQ	EB	40
	RFW1145	LORNG_RFW1145_35_07032023	WHO076	7/3/2023	WG	N	40
		LORNG_RFW1145_75_07032023	WHO077	7/3/2023	WG	N	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3D4165																
			Location	BW05006		BW10007		BW14005		BW16001		BW17004		BW20002		JMW-0416B		JMW0681		JMW0682		MMW3402R		OW10007		OW14004		OW16002		OW16003	
			Sample Date	5/8/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023		5/9/2023	
			Sample ID	LORNG_BW05006_05082023		LORNG_BW10007_05092023		LORNG_BW14005_05092023		LORNG_BW16001_05092023		LORNG_BW17004_05092023		LORNG_BW20002_05092023		LORNG_JMW-0416B_05092023		LORNG_JMW0681_05092023		LORNG_JMW0682_05092023		LORNG_MMW3402R_05092023		LORNG_OW10007_05092023		LORNG_OW14004_05092023		LORNG_OW16002_05092023		LORNG_OW16003_05092023	
			QC Code	N		N		N		N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorobutanoic acid (PFBA)	NG/L	1.2	J	22		2.9	J	2	U	2.4	J	6.2	J	3.3	J	2.2	J	3.6	J	7		28		8.7		4	J	5.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.1	J	4.9		4.2		0.5	U	4.7		12		6.5		2.2	J	3.2	J	2.6	J	12		15		6.3		1.2	J
		Perfluorohexanoic acid (PFHxA)	NG/L	0.94	J	8.6		4		0.5	U	4.3		9.3		2		2.4		2.2		4.1		13		19		6.3		0.58	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.52	J	11		1.8		0.5	U	2.7		9.3		0.57	J	0.97	J	1.5	J	3.9		12		9.6		2.4		0.34	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.3	J	13		4		0.25	U	3.9		11		1.2	J	1.9		2		6.5		12		27		3.3		1.4	J
		Perfluorononanoic acid (PFNA)	NG/L	0.5	U	3.5		0.53	J	0.5	U	0.26	J	0.79	J	0.5	U	0.5	U	0.5	U	1.8		2.2		0.29	J	0.36	J	0.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.35	J	5.5		1.1	J	0.44	U	0.82	J	2.2		0.39	J	1.8		1.9		1.1	J	2.9		3.3		0.9	J	0.55	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.22	J	0.32	J	0.82	J	0.47	U	0.89	J	2.7		0.34	J	1.7		1.8		0.25	J	0.63	J	3.5		0.93	J	0.34	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.3		6.5		10		0.47	U	14		43		3.6		13		15		11		8.6		56		8.4		3.7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.48	J	0.47	U	0.27	J	0.17	J	0.29	J	0.47	U	0.16	J	0.47	U	0.47	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.4		4		7.7		0.47	U	7.6		29		2.2		8		9.9		11		4.6		3.6	J	6.9		1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	UJ	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	UJ	1.9	U	1.9	U	1.9	U	1.9	U
PFAS	T	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.8	J	1.9	U	2.6	J	1.9	U	1.9	U	1.9	U	1.9	U	1.1	J	1.9	U	14		1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.26	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3D4165									C3D5831			
		Location		OW20001	OW20002	OW20004		OW20005	OW20007	SB/OW16001		SB/OW17001	AA20MW-02		BB_BW002	BB_OW002
		Sample Date		5/9/2023	5/9/2023	5/8/2023		5/8/2023	5/9/2023	5/8/2023		5/9/2023	5/10/2023		5/10/2023	5/10/2023
		Sample ID		LORNG_OW20001_05092023	LORNG_OW20002_05092023	LORNG_OW20004_05082023	LORNG_OW20004_05082023FD	LORNG_OW20005_05082023	LORNG_OW20007_05092023	LORNG_SB/OW16001_05082023	LORNG_SB/OW16001_05082023FD	LORNG_SB/OW17001_05092023	LORNG_AA20MW-02_05102023	LORNG_AA20MW-02_05102023FD	LORNG_BB_BW002_05102023	LORNG_BB_OW002_05102023
		QC Code		N	N	N	FD	N	N	N	FD	N	N	FD	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.8 J	4.2 J	1.1 J	1.1 J	4.5 J	5.5 J	4.7 J	4.2 J	11	14	14	2 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.4 J	7.1	0.5 U	0.5 U	7.2	10	3.6	3.8	30	27	27	0.5 U	0.5 U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.7	5	0.31 J	0.39 J	4.9	9.2	5.5	5.8	17	76	79	0.5 U	0.5 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3 J	4.2	0.5 U	0.5 U	3.2	7.7	2.4	2.4	4.8	19	19	0.5 U	0.5 U
		Perfluorooctanoic acid (PFOA)	NG/L	0.92 J	4.1	0.34 J	0.4 J	4.5	7.4	6.8	6.8	3.8	33	33	0.25 U	0.25 U
		Perfluorononanoic acid (PFNA)	NG/L	0.25 J	0.4 J	0.5 U	0.5 U	0.5 U	0.83 J	1.2 J	1.3 J	0.3 J	0.55 J	0.56 J	0.5 U	0.5 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.62 J	1.1 J	0.74 J	0.62 J	1.3 J	1.4 J	1.2 J	1 J	2.2	94	98	0.44 U	0.44 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.53 J	1.2 J	0.82 J	0.84 J	1.4 J	2	0.74 J	0.8 J	1.4 J	130	120	0.47 U	0.47 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	5	20	7.7	8.2	19	38	13	14	15	780	750	0.47 U	0.63 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.19 J	0.19 J	0.24 J	0.64 J	0.54 J	0.47 U	0.18 J	0.47 U	5.3	5.6	0.47 U	0.47 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	3.9	9.8	7.5	9.5	20	32	12	12	5.8	110	110	0.47 U	0.47 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2 J	2.5 J	1.9 U	0.96 J	1.1 J	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.25 U	0.25 U	0.13 J	0.27 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 J	0.25 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
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U = Analyte not detected at the associated detection limits
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Prepared by: AKN
Date: 11/10/23
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG	C3D5831																	
		Location	BW10006		BW16002	BW17005	BW18003	BW18006	BW20001	JEBS-4	JMW-0602		JMW0683		JPZ0606		NP_OW001		OW10005	
		Sample Date	5/10/2023		5/10/2023	5/10/2023	5/10/2023	5/10/2023	5/10/2023	5/10/2023	5/10/2023		5/10/2023		5/10/2023		5/10/2023		5/10/2023	
		Sample ID	LORNG_BW10006_05102023	LORNG_BW10006_05102023FD	LORNG_BW16002_05102023	LORNG_BW17005_05102023	LORNG_BW18003_05102023	LORNG_BW18006_05102023	LORNG_BW20001_05102023	LORNG_JEBS-4_05102023	LORNG_JMW-0602_05102023	LORNG_JMW-0602_05102023FD	LORNG_JMW0683_05102023		LORNG_JPZ0606_05102023		LORNG_NP_OW001_05102023		LORNG_OW10005_05102023	
		QC Code	N	FD	N	N	N	N	N	N	N	FD	N		N		N		N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1 J	4 J	1.1 J	10	0.6 J	4.3 J	8.2	5.2 J	2.5 J	2.5 J	5.2 J		5.8 J		2 U		6.8
		Perfluoropentanoic acid (PFPeA)	NG/L	6	6	1.2 J	27	0.25 J	6.9	17	7.6	2.2 J	2.3 J	9.5		5.7		0.5 U		9.5
		Perfluorohexanoic acid (PFHxA)	NG/L	8.4	7.9	1.8	19	0.22 J	3.9	16	6.7	3.9	3.8	18		6.8		0.5 U		11
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.1	3	0.27 J	16	0.5 U	2.7	15	6.3	1.5 J	1.6	7.3		3.5		0.5 U		5.7
		Perfluorooctanoic acid (PFOA)	NG/L	8.5	8.5	0.2 J	9.3	0.28 J	2.2	18	6.4	5.8	5.8	25		5.2		0.16 J		7
		Perfluorononanoic acid (PFNA)	NG/L	0.36 J	0.32 J	0.5 U	0.98 J	0.5 U	0.5 U	1.8	1.8	0.24 J	0.26 J	1.2 J		2.2		0.5 U		0.7 J
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		0.4 J		1 U		1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.3	2.3	0.17 J	1.8	0.22 J	0.71 J	3.1	1.2 J	1.4 J	1.4	3.9		1.6		0.44 U		2.7
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.8	2.9	0.47 U	1.9	0.47 U	0.64 J	4.1	1.1 J	1.5	1.6	6.1		2.5		0.47 U		2.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	41	41	0.66 J	27	1.4 J	6.3	85	18	22	23	100		35		0.38 J		21
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.61 J	0.57 J	0.47 U	0.34 J	0.47 U	0.47 U	1.7	0.35 J	0.47 J	0.5 J	3.8		1.2 J		0.47 U		0.39 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	38	35	0.58 J	20	0.76 J	2.7	110	24	25	25	180		61		0.56 J		25
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U		0.94 U		0.94 U		0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U		0.47 U		0.47 U		0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U		1.9 UJ		1.9 U		1.9 UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.3 J	1.9 U	1.9 U	1.9 U	3 J		1.9 UJ		1.9 U		0.91 J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	4.2 J	3.8 U	3.8 U	3.8 U	3.8 U		3.8 U		3.8 U		3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.23 J	0.25 U	0.13 J	0.25 U	0.25 U	1.4 J	0.25 U	0.48 J	0.45 J	2.1 J		0.25 U		0.25 U		0.16 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U		1 U		1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.51 J		1 U		1 U		1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U		2.5 U		2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U		5 U		5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U		4 U		4 U		4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U		3.8 U		3.8 U		3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U		2 U		2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U		60 U		60 U		60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U		6.6 U		6.6 U		6.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U		6.6 U		6.6 U		6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U		3.1 U		3.1 U		3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U		8.8 U		8.8 U		8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U		31 U		31 U		31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U		31 U		31 U		31 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

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Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3D9076																C3E0530			
		Location		JMW-0505		JMW-0806		JMW7913		JPZ1382		JPZ7808		LF2MW1		OW01003		OW20003		RFW1144		WBGB_BW001		043-MW03		JMW3102		JPZ0349	
		Sample Date		5/15/2023		5/11/2023		5/11/2023		5/12/2023		5/11/2023		5/11/2023		5/11/2023		5/11/2023		5/12/2023		5/11/2023		5/16/2023		5/15/2023		5/15/2023	
		Sample ID		LORNG_JMW-0505_05112023		LORNG_JMW-0806_05112023		LORNG_JMW7913_05112023		LORNG_JPZ1382_05112023		LORNG_JPZ7808_05112023		LORNG_LF2MW1_05112023		LORNG_OW01003_05112023		LORNG_OW20003_05112023		LORNG_RFW1144_05112023		LORNG_WBGB_BW001_05112023		LORNG_043-MW03_05162023		LORNG_JMW3102_05152023		LORNG_JPZ0349_05152023	
		QC Code		N		N		N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1	J	1.6	J	0.77	J	2	U	0.77	J	0.62	J	2	U	1.3	J	10		1.5	J	3.9	J	22		3.3	J
		Perfluoropentanoic acid (PFPeA)	NG/L	4.8		0.9	J	0.5	U	0.5	U	0.5	U	0.2	J	0.5	U	0.89	J	21		2.3	J	2.6	J	58		7.2	
		Perfluorohexanoic acid (PFHxA)	NG/L	4.8		1.7		0.5	U	0.29	J	0.5	U	0.29	J	0.5	U	1	J	16		2.4		2.3		37		6.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.8		0.8	J	0.5	U	0.5	U	0.5	U	0.19	J	0.5	U	0.44	J	12		1.1	J	1.8		1.4	J	2.9	
		Perfluorooctanoic acid (PFOA)	NG/L	4		2.2		0.25	U	0.55	J	0.3	J	0.89	J	0.23	J	1.4	J	17		1.5	J	3.4		2.8		6.8	
		Perfluorononanoic acid (PFNA)	NG/L	0.56	J	0.22	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.7		0.5	U	0.71	J	0.15	U	0.33	J
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.28	U	0.28	U	0.28	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.16	U	0.16	U	0.16	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.26	U	0.26	U	0.26	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.39	U	0.39	U	0.39	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.22	U	0.22	U	0.22	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.4		0.3	J	0.44	U	0.29	J	0.43	J	0.44	J	0.23	J	2.6		3.3		1.2	J	1.9		1.5		0.96	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.5	J	0.22	J	0.47	U	0.47	U	0.23	J	0.36	J	0.47	U	3.4		4.2		1.1	J	2.1		0.17	U	1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	18		6		0.27	J	1.6		3.2		6.1		1.6		36		79		6		22		1.3	J	26	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.21	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	1.6		1.2	J	0.16	J	0.79	J	0.15	U	0.21	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	11		6.1		0.47	U	0.94	J	0.53	J	7.3		0.81	J	55		79		6.3		62		0.19	U	13	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.32	U	0.32	U	0.32	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.23	U	0.23	U	0.23	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.34	U	0.34	U	0.34	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.55	U	0.55	U	0.55	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.2	J	2	J	1.9	U	0.79	U	0.79	U	2.7	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	1	U	1	U	1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	2.4		0.25	U	0.18	J	0.12	U	0.12	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.35	U	0.35	U	0.35	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.26	U	0.26	U	0.26	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.4	U	0.4	U	0.4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.36	U	0.36	U	0.36	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	1.2	U	1.2	U	1.2	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	1.7	U	1.7	U	1.7	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	1.1	U	1.1	U	1.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	1.2	U	1.2	U	1.2	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	0.54	U	0.54	U	0.54	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.24	U	0.24	U	0.24	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	30	U	30	U	30	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	3.1	U	3.1	U	3.1	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	2.3	U	2.3	U	2.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	1	U	1	U	1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	3.5	U	3.5	U	3.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	13	U	13	U	13	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	14	U	14	U	14	U

Notes:
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J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

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Date: 11/10/23
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3E2261																
		Location		BW03002	BW09001	EBGB_BW001	EBGB_OW002	FIELDQC	JBW7326A	JBW7326B	JMW0991	JMW0992	JMW6001		JMW7916	MMW0002	MMW0330			
		Sample Date		5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023		5/16/2023	5/16/2023	5/16/2023			
		Sample ID		LORNG_BW03002_05162023	LORNG_BW09001_05162023	LORNG_EBGB_BW001_05162023	LORNG_EBGB_OW002_05162023	LORNG_EB003_05162023	LORNG_JBW7326A_05162023	LORNG_JBW7326B_05162023	LORNG_JMW0991_05162023	LORNG_JMW0992_05162023	LORNG_JMW6001_05162023	LORNG_JMW6001_05162023FD	LORNG_JMW7916_05162023	LORNG_MMW0002_05162023	LORNG_MMW0330_05162023			
		QC Code		N	N	N	N	EB	N	N	N	N	N	FD	N	N	N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.4	J	3.8	J	1.5	J	0.81	J	2	U	5.6	J	4.9	J	1.8	J	0.99	J	13		11		4.2	J	2	U	6.3	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.6	J	8		1.7	J	1.2	J	0.5	U	10		7.7		1.5	J	0.4	J	9.7		7.9		1.2	J	0.5	U	10	
		Perfluorohexanoic acid (PFHxA)	NG/L	2.2		8.2		1.5	J	1.2	J	0.5	U	7.4		6.1		3		0.49	J	7.3		6		2		0.5	U	12	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.85	J	1.9		0.76	J	0.57	J	0.5	U	4.6		3.6		1.1	J	0.25	J	6		4.7		1.3	J	0.5	U	7.4	
		Perfluorooctanoic acid (PFOA)	NG/L	2.1		4.5		1.4	J	1.4	J	0.25	U	6		5.2		6.1		1	J	5.1		4.1		2.6		0.24	J	8.8	
		Perfluorononanoic acid (PFNA)	NG/L	0.17	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	J	0.43	J	0.23	J	0.5	U	1.9		1.6	J	0.27	J	0.5	U	0.87	J
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.35	J	0.68	J	0.77	J	0.41	J	0.44	U	2.3		2.2		0.58	J	0.27	J	0.57	J	0.53	J	0.91	J	0.44	U	3.8	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.31	J	0.51	J	0.73	J	0.3	J	0.47	U	2.9		2.7		0.49	J	0.47	U	0.38	J	0.32	J	0.5	J	0.47	U	5.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	8.5		12		6		3.2		0.47	U	32		30		7.3		1.7		6.5		5		15		0.47	U	62	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.61	J	0.58	J	0.47	U	0.47	U	0.24	J	0.18	J	0.17	J	0.47	U	1.8	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.47	U	2.2		4.2		0.58	J	0.47	U	29		25		12		1.8		16		15		6.7		0.47	U	78	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	UJ	1.9	UJ	1.9	UJ	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.2	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.31	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.32	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

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Former Loring Air Force Base, Limestone, Maine

			SDG	C3E6183																						C3E9046									
			Location	JMW1665		JMW1981		JPZ0686		LF2MW3		LF3MW3				LF3MW4		OW09001				RFW-38		BW13001		FIELDQC		JBW7203A		JBW7203B					
			Sample Date	5/18/2023		5/19/2023		5/19/2023		5/18/2023		5/18/2023				5/18/2023		5/18/2023				5/18/2023		5/23/2023		5/23/2023		5/23/2023		5/23/2023					
			Sample ID	LORNG_JMW1665_05182023		LORNG_JMW1981_05182023		LORNG_JPZ0686_05182023		LORNG_LF2MW3_05182023		LORNG_LF3MW3_05182023		LORNG_LF3MW3_05182023FD		LORNG_LF3MW4_05182023		LORNG_OW09001_05182023		LORNG_OW09001_05182023FD		LORNG_RFW-38_05182023		LORNG_BW13001_05232023		LORNG_EB008_05232023		LORNG_JBW7203A_05232023		LORNG_JBW7203B_05232023					
			QC Code	N		N		N		N		N		FD		N		N		FD		N		N		EB		N		N					
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier				
		Perfluorobutanoic acid (PFBA)	NG/L	6.3 J		5.7 J		2.6 J		1.2 J		2 U		2 U		1.8 J		7		6.3 J		2 U		1.6 J		2 U		6.3 J		5 J					
		Perfluoropentanoic acid (PFPeA)	NG/L	12		13		1.2 J		0.48 J		0.5 U		0.5 U		2.3 J		18		16		0.45 J		0.97 J		0.5 U		14		10					
		Perfluorohexanoic acid (PFHxA)	NG/L	11		10		0.96 J		0.73 J		0.5 U		0.5 U		3.5		26		23		0.59 J		1.2 J		0.5 U		9.7		8					
		Perfluoroheptanoic acid (PFHpA)	NG/L	7.4		5.6		0.66 J		0.41 J		0.5 U		0.5 U		1.6		9.4		8.3		0.22 J		0.92 J		0.5 U		6.3		5.1					
		Perfluorooctanoic acid (PFOA)	NG/L	7.7		6.8		1.4 J		0.8 U		0.25 U		0.25 U		5.7		25		22		0.95 J		0.98 J		0.11 J		6.6		6.3					
		Perfluorononanoic acid (PFNA)	NG/L	0.73 J		0.51 J		0.25 J		0.26 J		0.5 U		0.5 U		0.38 J		1 J		0.89 J		0.5 U		0.35 J		0.5 U		0.68 J		0.62 J					
		Perfluorodecanoic acid (PFDA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U					
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U					
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.5		3.2		0.61 J		0.18 J		0.44 U		0.44 U		0.53 J		3.8		3.4		0.44 U		0.42 J		0.44 U		2		1.9					
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.9		3.9		0.3 J		0.47 U		0.47 U		0.47 U		0.5 J		4.9		4.5		0.47 U		0.32 J		0.47 U		2.4		2.3					
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	34		32		4.5		2.2		0.47 U		0.47 U		7		160		130		1.1 J		4.8		0.47 U		24		24					
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.58 J		0.68 J		0.47 U		0.47 U		0.47 U		0.47 U		0.2 J		1.3 J		1.3 J		0.47 U		0.47 U		0.47 U		0.47 J		0.6 J					
		Perfluorooctanesulfonic acid (PFOS)	NG/L	39		38		4.8		2.9		0.47 U		0.47 U		13		78		68		1.4 J		6.5		0.47 U		29		31					
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U		0.94 U					
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U		0.47 U					
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U					
PFAS	T	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.6 J		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U		1.9 U					
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U					
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.23 J		0.13 J		0.25 U		0.25 U		0.25 U		0.25 U		0.3 J		3.1		2.8		0.14 J		0.25 U		0.25 U		0.37 J		0.25 U					
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U		1 U		1 U		1 U		1 U		1 U		0.71 J		1 U		1 U		1 U		1 U		1 U		1 U		1 U					
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U					
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U		5 U					
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U		4 U					
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U		3.8 U					
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U		2 U					
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U					
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U		60 U					
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U					
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U		6.6 U					
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U		3.1 U					
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U		8.8 U					
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U					
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U		31 U					

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
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PFAS = Per and Polyfluoroalkyl Substance

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Date: 11/10/23
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Date: 11/13/23

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Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3E9046													
		Location		JBW7345B			JBW7350		JBW7734		JBW7738A	JBW7738B	JMW-0406	JMW-0603	JMW0982		
		Sample Date		5/23/2023	5/22/2023		5/23/2023		5/23/2023		5/23/2023	5/23/2023	5/23/2023	5/23/2023	5/22/2023		
		Sample ID		LORNG_JBW7345B_05232023	LORNG_JBW7347B_05222023	LORNG_JBW7347B_05222023FD	LORNG_JBW7350_05232023	LORNG_JBW7350_05232023FD	LORNG_JBW7734_05232023	LORNG_JBW7734_05232023FD	LORNG_JBW7738A_05232023	LORNG_JBW7738B_05232023	LORNG_JMW-0406_05232023	LORNG_JMW-0603_05232023	LORNG_JMW0982_05222023	LORNG_JMW0982_05222023FD	
		QC Code		N	N	FD	N	FD	N	FD	N	N	N	N	N	FD	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1 J	3.4 J	3.5 J	3.5 J	3.5 J	5 J	5.1 J	7.5	10	5.6 J	6.7	2.8 J	2.7 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	6.9	4.8	5.2	6.4	6.4	7.6	7.7	18	25	4.5	2 J	4.2	4.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	7.7	4.6	4.8	8.5	8.4	9.5	9.5	25	36	4.2	1.3 J	8.3	8.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.1	2.4	2.6	5.1	5.1	6.1	6.2	6.4	9.3	3.9	0.72 J	3.1	2.9	
		Perfluorooctanoic acid (PFOA)	NG/L	6.3	5.5	6	7.7	7.9	7.6	7.9	9.8	14	5.4	2.5	10	10	
		Perfluorononanoic acid (PFNA)	NG/L	0.36 J	0.27 J	0.3 J	0.36 J	0.35 J	0.76 J	0.85 J	0.27 J	0.42 J	2.3	0.5 U	0.62 J	0.52 J	
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.3	1.6	1.7	1.7	1.7	2.4	2.6	12	18	1.8	0.82 J	0.81 J	0.76 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.8	2	2	1.9	2	3.5	3.6	12	19	2.5	0.49 J	0.97 J	1 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	28	31	32	24	24	51	52	78	110	48	5.7	12	12	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.42 J	0.36 J	0.33 J	0.3 J	0.27 J	1.3 J	1.2 J	2.9	4.5	1 J	0.47 U	0.29 J	0.29 J	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	24	16	16	13	14	65	66	120	180	100	1.8	19	19	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 J	1.8 J	1.8 J	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.21 J	0.15 J	0.25 U	0.36 J	0.45 J	0.25 U	0.19 J	0.37 J	0.25 U	1.1 J	0.96 J	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.4	2.1	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	0.52 J	0.82 J	1 U	1 U	1 U	1 U	1 U	1 U	0.75 J	0.72 J	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	1.4 J	2.5 U	2.5 U	2.5 U	2.5 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.3 J	5 U	5 U	5 U	5 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	

Notes:
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J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3E9046										C3F0921			
		Location		JMW1684		JMW1762	JPZ1780	MMW0009	MMW0422	MMW0423	RFW1147	USGS2		AA11MW-01	AA11MW-02	AA18MW-01	BW01007
		Sample Date		5/22/2023		5/22/2023	5/23/2023	5/23/2023	5/23/2023	5/23/2023	5/23/2023	5/23/2023		5/24/2023	5/24/2023	5/24/2023	5/24/2023
		Sample ID		LORNG_JMW1684_05222023	LORNG_JMW1684_05222023FD	LORNG_JMW1762_05222023	LORNG_JPZ1780_05232023	LORNG_MMW0009_05232023	LORNG_MMW0422_05232023	LORNG_MMW0423_05232023	LORNG_RFW1147_05232023	LORNG_USGS2_40_05232023	LORNG_USGS2_125_05232023	LORNG_AA11MW-01_05242023	LORNG_AA11MW-02_05242023	LORNG_AA18MW-01_05242023	LORNG_BWO1007_05242023
		QC Code		N	FD	N	N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.9 J	4.9 J	3 J	6.1 J	1.5 J	1.8 J	2 J	15	12	12	6.4 J	11	6.2 J	23
		Perfluoropentanoic acid (PFPeA)	NG/L	6.9	7	3.5	11	0.69 J	1.5 J	1.8 J	35	23	24	14	24	13	74
		Perfluorohexanoic acid (PFHxA)	NG/L	6.6	6.7	3	14	0.81 J	1.9	2.1	36	21	29	20	33	36	98
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.4	4.7	2.2	7.3	0.44 J	1.2 J	1.4 J	23	12	12	7.8	14	9.3	36
		Perfluorooctanoic acid (PFOA)	NG/L	4.8	5	3.2	12	2	2.5	3	38	22	35	9.6	16	51	110
		Perfluorononanoic acid (PFNA)	NG/L	0.47 J	0.45 J	0.25 J	0.83 J	0.5 U	0.5 U	0.5 U	5.1	1.6 J	1.6 J	0.51 J	1.1 J	1.4 J	5.3
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.39 J	1 U	1.1 U	1 U	1 U	0.48 J	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	0.26 J	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.9	3	1.6	2.8	1.1 J	1.2 J	1.3 J	5.8	3.4	4.2	8.3	13	6.3	12
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.5	3.4	2.1	3.4	0.8 J	1 J	1.1 J	9.2	4.4	5.4	10	17	7.9	20
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	31	32	23	77	15	14	16	220	83	110	81	130	200	440
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.63 J	0.53 J	0.48 J	0.61 J	0.47 U	0.21 J	0.19 J	4.8	1.5	1.9	3.2	6.1	3.1	10
		Perfluorooctanesulfonic acid (PFOS)	NG/L	34	33	18	38	3.2	7	8.2	290	98	130	180	280	200	450
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	1 U	0.94 U	0.94 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.52 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	4.5 J	7.3	11	1.3 J	2.1 J	1.5 J	36
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	2.3 J	2.6 J	3.8 U	3.8 U	3.8 U	2.5 J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.25 U	0.35 J	0.25 U	0.25 U	0.25 U	15	4.3	6.5	0.25 U	0.55 J	32	4.5
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	0.56 J	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	0.61 J	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.8 U	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	1.9 J	5 U	5 U	5 U	5 U	5.5 U	5 U	5 U	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4.4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	4.2 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	67 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	7.3 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	7.3 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.4 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	9.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	34 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	34 U	31 U	31 U	31 U	31 U

Notes:
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J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

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Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3F2062						C3G5758							
		Location		OW05003		OW08001	OW12002	USMW025		AA07MW-02		AA20MW-01	BW05007	BW06007		BW07003	BW08003
		Sample Date		5/25/2023		5/25/2023	5/25/2023	5/25/2023		6/5/2023		6/6/2023	6/6/2023	6/6/2023		6/6/2023	6/6/2023
		Sample ID		LORNG_OW05003_05252023	LORNG_OW05003_05252023FD	LORNG_OW08001_05252023	LORNG_OW12002_05252023	LORNG_USMW025_05252023	LORNG_USMW025_05252023FD	LORNG_AA07MW-02_06052023	LORNG_AA07MW-02_06052023FD	LORNG_AA20MW-01_06062023	LORNG_BW05007_06062023	LORNG_BW06007_06062023	LORNG_BW06007_06062023FD	LORNG_BW07003_06062023	LORNG_BW08003_06062023
		QC Code		N	FD	N	N	N	FD	N	FD	N	N	N	FD	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	21	21	37	14	3.1 J	3.2 J	60	59	7.3	67	87	89	85	10
		Perfluoropentanoic acid (PFPeA)	NG/L	71	71	140	41	2.9 J	3 J	220	220	9.7	230	270	290	320	23
		Perfluorohexanoic acid (PFHxA)	NG/L	40	41	150	35	3.1	3.2	250	260	32	140	140	150	260	20
		Perfluoroheptanoic acid (PFHpA)	NG/L	31	30	50	22	2.2	2.3	90	87	7.2	99	150	160	120	8.1
		Perfluorooctanoic acid (PFOA)	NG/L	28	27	180	26	5.3	5.3	290	280	21	78	85	82	200	15
		Perfluorononanoic acid (PFNA)	NG/L	6.7	6.4	5	3.5	0.48 J	0.49 J	11	11	2.6	19	17	18	24	0.74 J
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	0.33 J	1 U	1 U	1 U	0.83 J	0.9 J	1 U	0.62 J	1.4 J	1.4 J	1.2 J	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	14	14	23	10	0.89 J	0.98 J	48	48 J	36 J	34	9.9	10	79	2.2
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	27	27	36	16	0.85 J	0.89 J	90	88	90	47	13	13	100	2
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	240	270	640	170	31	31	920	920	830	340	100	100	890	45
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	11	11	8.7	10	0.29 J	0.29 J	29	30	64	23	3.5	3.6	82	0.34 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	470	530	450	590	15	16	1,000	1,000	2,300	1,100	190	190	2,500	13
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.47 J	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.1 J	1.9 U	1.9 U	1.9 U	15	14	1.9 U	1.9 U	1.5 J	1.5 J	8.2	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	13	13	63	33	1.9 U	1.9 U	670	670	1.8 J	110	220	220	510	8
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	1 J	3.8 U	3.8 U	3.8 U	59	62	3.8 UJ	16	75	75	100	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	4.4	0.63 J	0.25 U	0.25 U	32	34	0.53 J	2.1	3.9	3.6	4.9 J	0.37 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 UJ	2.5 UJ	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3G5758																			
		Location		FIELDQC		JBW7403		JBW7614		JMW3501		JMW7322		JPZ0342		JPZ0348		MMW0326		OW05002		OW07001		OW07003		UNK-034			
		Sample Date		6/6/2023		6/6/2023		6/5/2023		6/6/2023		6/5/2023		6/6/2023		6/6/2023		6/5/2023		6/6/2023		6/6/2023		6/6/2023		6/6/2023			
		Sample ID		LORNG_EB010_06062023		LORNG_JBW7403_06062023		LORNG_JBW7614_06052023		LORNG_JMW3501_06062023		LORNG_JMW7322_06052023		LORNG_JPZ0342_06062023		LORNG_JPZ0348_06062023		LORNG_MMW0326_06052023/MS/MSD		LORNG_OW05002_06062023	LORNG_OW05002_06062023FD	LORNG_OW07001_06062023		LORNG_OW07003_06062023		LORNG_UNK-034_80_06062023		LORNG_UNK-034_180_06062023	
		QC Code		EB		N		N		N		N		N		N		N		N	FD	N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2	U	2	U	2.1	J	2.7	J	5.6	J	24		8.1		2	J	32		31		220		90		0.84	J	0.64	J
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5	U	0.5	U	1.9	J	1.9	J	8.9		84		21		2.9	J	120		120		700		400		1.1	J	0.85	J
		Perfluorohexanoic acid (PFHxA)	NG/L	0.5	U	0.5	U	1.5	J	1.5	J	10		94		29		1.8		120		120		540		330		1.3	J	0.9	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.5	U	0.5	U	0.79	J	0.92	J	4.7		33		11		0.73	J	66		65		370		160		0.48	J	0.34	J
		Perfluorooctanoic acid (PFOA)	NG/L	0.25	U	0.25	U	1.8		1.4	J	8.7		110		30		1.4	J	130		130		520		250		1.1	J	0.54	J
		Perfluorononanoic acid (PFNA)	NG/L	0.5	U	0.5	U	0.17	J	0.17	J	0.66	J	3.4		1.2	J	0.3	J	22		23		170		29		0.5	U	0.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	11		1.3	J	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.65	J	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.44	U	0.44	U	0.55	J	0.38	J	2.6		16		4.2		0.65	J	82		77		300		87		0.82	J	0.44	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47	U	0.47	U	0.44	J	0.23	J	2.5		23		5.5		0.28	J	110		100		450		140		0.71	J	0.33	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.47	U	0.47	U	3.6		2		24		330		160		1.8		900		870		3,200		1,200		4.3		1.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.39	J	5.8		1.5		0.47	U	28		30		240		89		0.47	U	0.47	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.47	U	0.47	U	4.4		0.59	J	19		240		90		3		900		890		15,000		3,500		7.1		2.9	J+
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	15	J	0.35	J	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.94	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.1	J	1.9	U	1.9	U	1.9	U	1.9	U	7.1	J	9.4		1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	64		1.9	U	1.9	U	110		120		460		710		2	J	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3	J	3.8	U	3.8	U	5.6	J	6.3		9.9	J	120		3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	7.7		3.1		0.13	J	2.1		2.2		8.2	J	5.8	J	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	UJ	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	UJ	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	UJ	1	UJ	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	UJ	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	5	UJ	2.5	UJ	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	UJ	5	UJ	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	7.6	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	120	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	13	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	13	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	6.2	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	18	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	62	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	62	U	31	U	31	U	31	U

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N = Normal Field Sample; FD = Field Duplicate
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U = Analyte not detected at the associated detection limits
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

| | | |

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Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3G7006		C3H0616																			
		Location		SB/OW12001		UNK-034		AA07MW-01		ASMW101		BW10008		BW18010		EBGB_BW002		FIELDQC				GC_BW001		GC_BW002S		JBW7215B	
		Sample Date		6/7/2023		6/7/2023		6/9/2023		6/9/2023		6/8/2023		6/8/2023		6/8/2023		6/8/2023				6/8/2023		6/8/2023		6/8/2023	
		Sample ID		LORNG_SB/OW12001_06072023		LORNG_UNK-034_280_06072023		LORNG_AA07MW-01_06092023		LORNG_AA07MW-01_06092023EFF		LORNG_ASMW101_06092023		LORNG_BW10008_06082023		LORNG_BW18010_06082023		LORNG_EBGB_BW002_06082023		LORNG_EB013_06082023		LORNG_EB014_06082023		LORNG_EB015_06082023		LORNG_GC_BW001_06082023		LORNG_GC_BW002S_06082023		LORNG_JBW7215B_06082023	
		QC Code		N		N		N		N		N		N		N		N		EB		EB		EB		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	9.6		0.65	J	280		2	U	5.9	J	1.7	J	2	J	0.78	J	2	U	2	U	2	U	2	U	2	U	5.7	J
		Perfluoropentanoic acid (PFPeA)	NG/L	18		0.93	J	1,300		0.5	U	11		2.5	J	5.6		1.6	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	
		Perfluorohexanoic acid (PFHxA)	NG/L	24		0.95	J	1,100		0.15	J	11		3.8		6.7		1.2	J	0.5	U	0.5	U	0.5	U	0.44	J	0.5	U	7.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	14		0.36	J	740		0.2	J	7		0.83	J	0.65	J	0.54	J	0.5	U	0.5	U	0.5	U	0.16	J	0.5	U	6.3	
		Perfluorooctanoic acid (PFOA)	NG/L	23		0.56	J	1,000		0.47	J	7		2.2		0.37	J	1.4	J	0.25	U	0.25	U	0.25	U	0.43	J	0.25	U	5.2	
		Perfluorononanoic acid (PFNA)	NG/L	5.4		0.5	U	170		0.5	U	1.2	J	0.5	U	0.5	U	0.25	J	0.5	U	0.5	U	0.5	U	0.26	J	0.5	U	0.98	J
		Perfluorodecanoic acid (PFDA)	NG/L	0.34	J	1	U	23		1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	3.6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	11		0.43	J	46		0.44	U	2		0.49	J	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	1.6	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	17		0.38	J	100		0.47	U	2.2		0.47	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	1.7	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	220		1.9		2,400		0.93	J	37		6.3		0.47	U	5.1		0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	22	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	18		0.47	U	93		0.47	U	0.56	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	900		2.7		6,900		6.4		35		3.4	J+	0.47	U	5.8		0.47	U	1.3	J	0.47	U	0.47	U	0.47	U	28	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	11		0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	UJ	1.9	U	18	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	UJ	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.9	J	1.9	U	850		1.3	J	1.9	U	14		1.7	J	1.9	U	9.9		1.9	U	1.9	U	1.9	U	1.9	UJ	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	UJ	3.8	U	250		3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	UJ	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	300		0.76	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	13	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	UJ	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	UJ	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	4.6	J	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3H0616																				C3H5622			
			Location	JBW7305		JMW0301C		JMW3601		UNK-036		UNK-042		UNK-23001		USMW004				USMW013		USMW015		USMW019		USMW024		BW01005		BW18004	
			Sample Date	6/8/2023		6/8/2023		6/8/2023		6/9/2023		6/9/2023		6/8/2023		6/8/2023				6/8/2023		6/8/2023		6/8/2023		6/8/2023		6/13/2023		6/13/2023	
			Sample ID	LORNG_JBW7305_33_06082023		LORNG_JMW0301C_06082023		LORNG_JMW3601_06082023		LORNG_UNK-036_06092023		LORNG_UNK-042_06092023		LORNG_UNK-23001_06082023		LORNG_USMW004_06082023		LORNG_USMW004_06082023FD		LORNG_USMW013_06082023		LORNG_USMW015_06082023		LORNG_USMW019_06082023		LORNG_USMW024_06082023		LORNG_BW01005_06132023		LORNG_BW18004_06132023	
			QC Code	N		N		N		N		N		N		N		FD		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorobutanoic acid (PFBA)	NG/L	6.3	J	11		1.9	J	0.77	J	7.1		2	U	2	U	2	U	2	U	2	U	2	U	0.6	J	28		1.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	15		33		2.3	J	0.28	J	21		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.25	J	87		0.69	J
		Perfluorohexanoic acid (PFHxA)	NG/L	11		47		1.8		0.35	J	19		0.5	U	0.5	U	0.5	U	0.82	J	0.5	U	0.18	J	0.25	J	100		5	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.4		16		1.5	J	0.4	J	8.9		0.5	U	0.5	U	0.5	U	0.29	J	0.5	U	0.29	J	0.23	J	36		0.35	J
		Perfluorooctanoic acid (PFOA)	NG/L	8.5		48		6.5		1.7		14		0.13	J	0.25	U	0.28	J	5		0.25	U	0.76	J	1.1	J	130		0.4	J
		Perfluorononanoic acid (PFNA)	NG/L	0.88	J	1.5	J	0.37	J	0.5	U	0.94	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.18	J	7.5		0.5	UJ
		Perfluorodecanoic acid (PFDA)	NG/L	0.36	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.55	J	1	UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.7		5.6		0.79	J	0.31	J	3.7		0.44	U	0.44	U	0.16	J	0.31	J	0.44	U	0.2	J	0.27	J	17		0.31	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6		7.6		0.75	J	0.47	U	4.9		0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	30		0.52	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	41		250		7.3		1.2	J	70		0.47	U	1.3	J	1.3	J	16		0.47	U	0.44	J	0.83	J	480		0.33	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.67	J	2.1		0.47	U	0.47	U	1.1	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	21		0.47	UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	32		110		8.5		5.2		57		0.47	U	0.47	U	0.95	J	14		0.47	U	2.8		4.9		730		0.78	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	UJ
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
PFAS	T	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	3.8	J	1.9	UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	0.89	J	1.9	U	1.9	U	2.7	J	1.9	U	1.1	J	1.9	U	1.9	U	1.9	U	1.9	U	5.2	J	1.9	U	310		70	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	5.1	J	3.8	UJ
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	3.5	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	1.5	J	0.25	U	0.25	U	0.25	U	15		0.25	UJ
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	UJ
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3H5622															
		Location		FIELDQC				JBW7107	JBW7304	JBW7305	JBW7327	JBW7335A	JBW7338B	JBW8004B	JMW8011	MMW0020	
		Sample Date		6/13/2023				6/13/2023	6/13/2023	6/13/2023	6/13/2023	6/13/2023	6/13/2023	6/13/2023	6/13/2023	6/13/2023	
		Sample ID		LORNG_EB016_06132023	LORNG_EB017_06132023	LORNG_EB018_06132023	LORNG_EB019_06132023	LORNG_JBW7107_06132023	LORNG_JBW7304_06132023	LORNG_JBW7305_107_06132023	LORNG_JBW7327_45_06132023	LORNG_JBW7335A_06132023	LORNG_JBW7338B_06132023	LORNG_JBW8004B_06132023	LORNG_JMW8011_06132023	LORNG_MMW0020_60_06132023	LORNG_MMW0020_60_06132023FD
		QC Code		EB	EB	EB	EB	N	N	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2 U	2 U	2 U	2 U	1.1 J	7.4	7.1	6.1 J	8.3 J	4.4 J	63 J	63 J	2 UJ	2 UJ
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	2.5 J	18	17	14 J	15 J	5.7	200 J	200	0.5 UJ	0.5 UJ
		Perfluorohexanoic acid (PFHxA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	1.5 J	12	13	20 J	11 J	6.2	390 J	420	0.5 UJ	0.5 UJ
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.58 J	8.2	7.6	4.5 J	7.7 J	3.6	130 J	130	0.5 UJ	0.5 UJ
		Perfluorooctanoic acid (PFOA)	NG/L	0.25 U	0.25 U	0.25 U	0.25 U	0.79 J	6	8.8	8.5 J	7.7 J	4.7	350 J	380	0.14 J	0.23 J
		Perfluorononanoic acid (PFNA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.62 J	0.86 J	0.25 J	0.64 J	0.36 J	25 J	29	0.5 UJ	0.5 UJ
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	0.37 J	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	5 UJ	5 U	0.5 UJ	0.5 UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	5 UJ	5 U	0.5 UJ	0.5 UJ
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.44 U	0.44 U	0.44 U	0.44 U	0.69 J	2	3.1	1.6 J	2.1 J	2.3	43 J	48	0.44 UJ	0.44 UJ
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.41 J	2.4	4	1.5 J	2.6 J	2.6	68 J	68	0.47 UJ	0.47 UJ
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	2.4 J	24	47	20 J	33 J	26	1,700 J	2,000	0.73 J	0.75 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 UJ	0.59 J	0.76 J	0.47 UJ	0.48 J	0.39 J	30 J	29	0.47 UJ	0.47 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.47 U	0.61 J	0.68 J	0.47 U	1.3 UJ	34	41	5.1 J	24 J	23	1,900 J	2,100	0.42 J	0.47 UJ
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 UJ	0.94 U	0.94 U	0.94 UJ	0.94 UJ	0.94 U	9.4 UJ	9.4 U	0.94 UJ	0.94 UJ
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 UJ	0.47 U	0.47 U	0.47 UJ	0.47 UJ	0.47 U	4.7 UJ	4.7 U	0.47 UJ	0.47 UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 UJ	1.9 U	1.9 U	2.1 J	1.9 UJ	1.9 U	19 UJ	19 U	1.9 UJ	1.9 UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.1 J	32	26	53	1.9 UJ	44	38	460 J	7.3 J+	32 J+	140 J	170	1.9 UJ	1.9 UJ
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 UJ	3.8 U	3.8 U	1.4 J	3.8 UJ	3.8 U	56 J	66	3.8 UJ	3.8 UJ
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.25 U	0.25 U	0.41 J	0.25 U	0.25 U	2.4 J	0.9 J	0.25 U	44 J	45	0.25 UJ	0.25 UJ
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	10 UJ	10 U	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 UJ	2.5 U	2.5 U	2.5 UJ	2.5 UJ	2.5 U	25 UJ	25 U	2.5 UJ	2.5 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U	5 UJ	5 UJ	5 U	50 UJ	50 U	5 UJ	5 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 UJ	4 U	4 U	4 UJ	4 UJ	4 U	40 UJ	40 U	4 UJ	4 UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	1.3 J	3.8 UJ	3.8 U	3.8 U	3.8 UJ	3.8 UJ	3.8 U	38 UJ	38 U	3.8 UJ	3.8 UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 UJ	2 U	2 U	2 UJ	2 UJ	2 U	20 UJ	20 U	2 UJ	2 UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	5 UJ	5 U	0.5 UJ	0.5 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 UJ	60 U	60 U	60 UJ	60 UJ	60 U	600 UJ	600 U	60 UJ	60 UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 UJ	6.6 U	6.6 U	6.6 UJ	6.6 UJ	6.6 U	66 UJ	66 U	6.6 UJ	6.6 UJ
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 UJ	6.6 U	6.6 U	6.6 UJ	6.6 UJ	6.6 U	66 UJ	66 U	6.6 UJ	6.6 UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 UJ	3.1 U	3.1 U	3.1 UJ	3.1 UJ	3.1 U	31 UJ	31 U	3.1 UJ	3.1 UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 UJ	8.8 U	8.8 U	8.8 UJ	8.8 UJ	8.8 U	88 UJ	88 U	8.8 UJ	8.8 UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 UJ	31 U	31 U	31 UJ	31 UJ	31 U	310 UJ	310 U	31 UJ	31 UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 UJ	31 U	31 U	31 UJ	31 UJ	31 U	310 UJ	310 U	31 UJ	31 UJ

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
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Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3H5622																			
			Location	MMW0020		MMW0132		OW01002		OW01004		BSMW3S		BW02001		BW06006		CBW02		FIELDQC						IDW-EFF		IDW-INF	
			Sample Date	6/13/2023		6/12/2023		6/13/2023		6/12/2023		6/14/2023		6/14/2023		6/14/2023		6/14/2023		6/14/2023						6/15/2023		6/15/2023	
			Sample ID	LORNG_MMW0020_150_06132023		LORNG_MMW0132_06122023		LORNG_OW01002_06132023		LORNG_OW01004_06122023		LORNG_BSMW3S_06142023		LORNG_BW02001_06142023		LORNG_BW06006_06142023		LORNG_CBW02_06142023		LORNG_EB020_06142023		LORNG_EB021_06142023		LORNG_EB022_06142023		LORNG_EB023_06142023		LORNG_ND40IDWEFF_06152023		LORNG_ND40IDWINF_06152023	
			QC Code	N		N		N		N		N		N		N		N		EB		EB		EB		EB		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorobutanoic acid (PFBA)	NG/L	2	UJ	7	J	85		44	J	30		2	U	39		3.6	J	2	U	2	U	2	U	2	U	2	U	2.8	J
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5	UJ	15	J	250		130	J	67		0.5	U	94		2	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	6.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	0.13	J	6.3	J	770		190	J	89		0.5	U	68		2		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	6.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.5	UJ	2.9	J	160		98	J	77		0.5	U	56		1	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	3	
		Perfluorooctanoic acid (PFOA)	NG/L	0.22	J	1.5	J	580		180	J	210		0.25	U	49		1.8		0.25	U	0.12	J	0.25	U	0.25	U	0.25	U	7.5	
		Perfluorononanoic acid (PFNA)	NG/L	0.5	UJ	1.3	J	64		16	J	22		0.5	U	13		0.47	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.45	J
		Perfluorodecanoic acid (PFDA)	NG/L	1	UJ	1	UJ	6	J	0.83	J	1.6	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	UJ	0.5	UJ	5	U	0.5	UJ	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	UJ	0.5	UJ	5	U	0.5	UJ	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.44	UJ	0.48	J	69		28	J	15		0.44	U	23		0.63	J	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	1.6	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47	UJ	0.47	UJ	100		44	J	32		0.47	U	29		0.4	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	1.8	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.84	J	0.63	J	9,500		920	J	670		0.47	U	240		11		0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	30	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	UJ	0.47	UJ	72		19	J	27		0.47	U	10		0.17	J	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.56	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.46	UJ	26	J	8,200		1,200	J	1,500		0.47	U	500		9.6		0.39	J	0.53	J	0.47	U	0.49	J	0.47	U	39	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	UJ	0.94	UJ	9.4	U	0.94	UJ	1	J	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	UJ	0.47	UJ	4.7	U	0.47	UJ	0.94	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
PFAS	T	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	UJ	1.9	UJ	19	U	0.6	J	3.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	UJ	3.7	J	240		76	J	12	J	1.9	U	14		1.9	U	0.79	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	UJ	3.8	UJ	160		69	J	7.6	U	3.8	U	5.9	J	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.47	J	1.4	J	130		17	J	270		0.86	U	3.9		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.69	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	1.6	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	UJ	1	UJ	10	U	1	UJ	2	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	UJ	2.5	UJ	25	U	2.5	UJ	5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	UJ	5	UJ	50	U	5	UJ	10	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	UJ	4	UJ	40	U	4	UJ	8	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	UJ	3.8	UJ	38	U	3.8	UJ	7.6	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	UJ	2	UJ	20	U	2	UJ	4	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	UJ	0.5	UJ	5	U	0.5	UJ	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	UJ	60	UJ	600	U	60	UJ	120	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	UJ	6.6	UJ	66	U	6.6	UJ	13	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	UJ	6.6	UJ	66	U	6.6	UJ	13	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	UJ	3.1	UJ	31	U	3.1	UJ	6.2	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	UJ	8.8	UJ	88	U	8.8	UJ	18	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	UJ	11	UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	UJ	31	UJ	310	U	31	UJ	62	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	UJ	31	UJ	310	U	31	UJ	62	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
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J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3H5740																	
		Location		JBW7327		JBW7339A	JBW7339B	JBW7711	JBW8003B	JMW0880	LYS01007D	LYS01007S	LYS05012D	LYS05012S	LYS07007D	LYS07007DDUP	LYS07007S				
		Sample Date		6/14/2023		6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023	6/14/2023				
		Sample ID		LORNG_JBW7327_158_06142023	LORNG_JBW7327_158_06142023FD	LORNG_JBW7339A_06142023	LORNG_JBW7339B_06142023	LORNG_JBW7711_06142023	LORNG_JBW8003B_06142023	LORNG_JMW0880_06142023	LORNG_LYS01007D_06142023	LORNG_LYS01007S_06142023	LORNG_LYS05012D_06142023	LORNG_LYS05012S_06142023	LORNG_LYS07007D_06142023	LORNG_LYS07007DDUP_06142023	LORNG_LYS07007S_06142023				
		QC Code		N	FD	N	N	N	N	N	N	N	N	N	N	N	N				
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier				
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5.5 J	5.5 J	24	24	3.5 J	32 J	2.2 J	140	280	610 J	220 J	830 J	1,400 J	1,900 J				
		Perfluoropentanoic acid (PFPeA)	NG/L	11	11	76 J	76	2.3 J	83 J	1.1 J	450	700	1,700	1,100	4000 J	6,800 J	6,800 J				
		Perfluorohexanoic acid (PFHxA)	NG/L	10	11	99	85	7.6	210	2.4	1,000	1,500	2,600	770	4,500 J	7,300 J	4,500 J				
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.6	3.4	34	34	2.6	70	0.89 J	390	500	950	1,200	2,000 J	3,700 J	2,400 J				
		Perfluorooctanoic acid (PFOA)	NG/L	8.2	8.3	110	100	12	200	3	970	1,100	1,500	1,100	5,500 J	9,900 J	2,500 J				
		Perfluorononanoic acid (PFNA)	NG/L	0.5 U	0.34 J	3.1 J	5.1	0.5 J	18	0.24 J	52	71	48 J	30 J	150 J	520 J	530				
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	0.58 J	0.38 J	0.49 J	1 U	10 U	1 U	10 U	6.4 J	100 U	100 U	100 U	100 U	100 U				
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.48 J	0.5 U	0.5 U	0.5 U	5 U	0.5 U	5 U	5 U	50 U	50 U	50 U	50 U	50 U				
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	0.42 J	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 J	0.5 U	0.5 U	0.5 U	5 U	0.5 U	5 U	5 U	50 U	50 U	50 U	50 U	50 U				
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.6	1.4	14 J	13	3.2	27 J	0.55 J	130	250	950	110 J	3,200 J	5700 J	1,800 J				
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.2 J	1.4 J	23 J	20	5	32	0.49 J	330	500	1,200	170	6,700	8,200	3,000 J				
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	21	22	450	360	100	1,100	9.6	6,300	7,500	10,000	1,800	67,000	86,000	19,000 J				
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.16 J	0.47 U	6.1	5.9	1.9	15	0.47 U	68	110	160	76 J	340 J	3,100 J	1,100				
		Perfluorooctanesulfonic acid (PFOS)	NG/L	5.7	5.4	290 J	290	130	1400	11	2,400	5,200	1,100	12,000	9,400 J	36,000 J	76,000				
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	9.4 U	0.94 U	9.4 U	9.4 U	94 U	94 U	94 U	94 U	94 U				
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	4.7 U	0.47 U	4.7 U	4.7 U	47 U	47 U	47 U	47 U	47 U				
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	0.75 J	1.9 U	19 U	1.9 U	19 U	19 UJ	190 U	190 U	170 J	320 J	190 UJ				
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	4 U	4 J	38	50	0.81 J	27 J	1.9 U	9.8 J	24 J	1,900	190 U	19,000 J	31,000 J	4,800				
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	1 J	3.6 J	3.8 U	30 J	3.8 U	38 U	38 U	380 U	160 J	380 U	380 U	380 U				
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.63 UJ	2.6 J	12 J	7.2	1.3 U	22 J	1.3 J	14 J	46 J	25 U	140 J	25 U	25 U	25 U				
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 UJ	100 U	100 U	100 U	100 U				
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	100 U	100 U	100 U	100 U	100 U				
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	4.6 J	2.5 U	2.5 U	2.5 U	25 U	2.5 U	25 U	25 U	250 U	250 U	250 U	250 U	250 U				
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5.8 J	5 U	5 U	5 U	50 U	5 U	50 U	50 U	500 U	500 U	500 U	500 U	500 U				
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	40 U	4 U	40 U	40 U	400 U	400 U	400 U	400 U	400 U				
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	38 U	3.8 U	38 U	38 U	380 U	380 U	380 U	380 U	380 U				
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	20 U	2 U	20 U	20 U	200 U	200 U	200 U	200 U	200 U				
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	5 U	5 U	50 U	50 U	50 U	50 U	50 U				
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	600 U	60 U	600 U	600 U	6,000 U	6,000 U	6,000 U	6,000 U	6,000 U				
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	66 U	6.6 U	66 U	66 U	660 U	660 U	660 U	660 U	660 U				
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	66 U	6.6 U	66 U	66 U	660 U	660 U	660 U	660 U	660 U				
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	31 U	3.1 U	31 U	31 U	310 U	310 U	310 U	310 U	310 U				
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	88 U	8.8 U	88 UJ	88 UJ	880 UJ	880 UJ	880 UJ	880 UJ	880 UJ				
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	310 U	31 U	310 U	310 U	3,100 U	3,100 U	3,100 U	3,100 U	3,100 U				
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	310 U	31 U	310 U	310 U	3100 U	3,100 U	3,100 U	3,100 U	3,100 U				

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NG/L = nanograms per liter
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Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3H5740				C3H9763																	
		Location		LYS07007SDUP		MMW8015		OW24001		AA18MW-02		BW01008			BW13003			FIELDQC				FMW3413		GC_BW002D	
		Sample Date		6/14/2023		6/14/2023		6/14/2023		6/15/2023		6/15/2023			6/15/2023			6/15/2023				6/15/2023		6/15/2023	
		Sample ID		LORNG_LYS07007SDUP_06142023		LORNG_MMW8015_06142023		LORNG_OW24001_06142023		LORNG_AA18MW-02_06152023		LORNG_BW01008_06152023		LORNG_BW01008_06152023FD	LORNG_BW13003_06152023		LORNG_BW13003_06152023FD	LORNG_EB024_06152023		LORNG_EB025_06152023		LORNG_EB026_06152023		LORNG_EB027_06152023		LORNG_FMW3413_06152023		LORNG_GC_BW002D_06152023	
		QC Code		N		N		N		N		N		FD	N		FD	EB		EB		EB		EB		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1,100	J	49	J	8.1		4	J	4.2	J	4.2 J	6.7		5.9 J	2	U	2	U	2	U	2	U	7.9		2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	4,100	J	150		18		7.8		10		11	12		10	0.5	U	0.5	U	0.5	U	0.5	U	16		0.5	U
		Perfluorohexanoic acid (PFHxA)	NG/L	3,000	J	310		8.9		4.9		16		17	11		9	0.5	U	0.5	U	0.5	U	0.5	U	11		0.74	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1,300	J	89		5.2		3.3		5.6		5.3	14		12	0.5	U	0.5	U	0.5	U	0.5	U	11		0.5	U
		Perfluorooctanoic acid (PFOA)	NG/L	1,400	J	320		2.6		2.6		26		23	14		13	0.25	U	0.25	U	0.25	U	0.25	U	7		0.25	U
		Perfluorononanoic acid (PFNA)	NG/L	490		19		0.2	J	0.5	U	0.86	J	0.86 J	1.9		2	0.5	U	0.5	U	0.5	U	0.5	U	1.2	J	0.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	50	U	5	U	0.5	U	0.5	U	0.5	U	0.5 U	0.5	U	0.5 U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	50	U	5	U	0.5	U	0.5	U	0.5	U	0.5 U	0.5	U	0.5 U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	800	J	36		0.73	J	0.78	J	3.7		3.8	2.1		1.8	0.44	U	0.44	U	0.44	U	0.44	U	1.5		0.44	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1300	J	54		0.66	J	0.84	J	5.8		5.4	2		1.5	0.47	U	0.47	U	0.47	U	0.47	U	1.8		0.47	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	9,600	J	1,400		8.2		8.5		120		110	15		12	0.47	U	0.47	U	0.47	U	0.47	U	21		0.47	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1,200		27		0.47	U	0.47	U	1.1	J	0.97 J	0.37	J	0.2 J	0.47	U	0.47	U	0.47	U	0.47	U	0.36	J	0.47	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	96,000		1,500		5.9		5		60		59	13		18	0.24	J	0.47	U	0.47	U	0.52	J	20		0.47	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	94	U	9.4	U	0.94	U	0.94	U	0.94	U	0.94 U	0.94	U	0.94 U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	47	U	4.7	U	0.47	U	0.47	U	0.47	U	0.47 U	0.47	U	0.47 U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	97	J	19	U	1.9	U	1.9	U	1.9	U	1.9 U	1.9	U	1.9 U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	4,400		130		1.9	U	1.9	U	1.9	U	1.9 U	1.9	U	1.9 U	1.9	U	1.9	U	1.9	U	1.3	J	1.9	U	4.1	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	180	J	39	J	3.8	U	3.8	U	3.8	U	3.8 U	3.8	U	3.8 U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	25	U	38		0.65	U	0.25	U	0.25	U	0.25 U	0.25	U	0.25 U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	100	U	10	U	1	U	1	U	1	U	1 U	1	U	1 U	0.41	J	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	250	U	25	U	2.5	U	2.5	U	2.5	U	2.5 U	2.5	U	2.5 U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	500	U	50	U	5	U	5	U	5	U	5 U	5	U	5 U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	400	U	40	U	4	U	4	U	4	U	4 U	4	U	4 U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	380	U	38	U	3.8	U	3.8	U	3.8	U	3.8 U	3.8	U	3.8 U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	200	U	20	U	2	U	2	U	2	U	2 U	2	U	2 U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	50	U	5	U	0.5	U	0.5	U	0.5	U	0.5 U	0.5	U	0.5 U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	6,000	U	600	U	60	U	60	U	60	U	60 U	60	U	60 U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	660	U	66	U	6.6	U	6.6	U	6.6	U	6.6 U	6.6	U	6.6 U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	660	U	66	U	6.6	U	6.6	U	6.6	U	6.6 U	6.6	U	6.6 U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	310	U	31	U	3.1	U	3.1	U	3.1	U	3.1 U	3.1	U	3.1 U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	880	UJ	88	UJ	8.8	U	8.8	U	8.8	U	8.8 U	8.8	U	8.8 U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	3,100	U	310	U	31	U	31	U	31	U	31 U	31	U	31 U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	3,100	U	310	U	31	U	31	U	31	U	31 U	31	U	31 U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

		SDG		C3H9763										C3I3214		
		Location		JBW7105		JBW7336A	JBW7912		JMW0882		JMW0980	OW17003	UNK-033	FIELDQC		
		Sample Date		6/15/2023		6/15/2023	6/15/2023		6/15/2023		6/15/2023	6/15/2023	6/15/2023	6/20/2023	6/21/2023	
		Sample ID		LORNG_JBW7105_06152023	LORNG_JBW7105_06152023FD	LORNG_JBW7336A_06152023	LORNG_JBW7912_40_06152023	LORNG_JBW7912_150_06152023	LORNG_JMW0882_06152023	LORNG_JMW0882_06152023FD	LORNG_JMW0980_06152023	LORNG_OW17003_06152023	LORNG_UNK-033_06152023	LORNG_EB028_06202023	LORNG_EB029_06212023	LORNG_EB030_06212023
		QC Code		N	FD	N	N	N	N	FD	N	N	N	EB	EB	EB
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.3 J	1.3 J	5.5 J	11	11	3 J	2.9 J	4.5 J	3.7 J	8.5	2 U	2 U	2 U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.1 J	3.2 J	7.6	27	20	1.8 J	1.7 J	3.3	5.2	30	0.5 U	0.5 U	0.5 U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	1.8	6.4	18	14	4.7	5	12	4.4	30	0.5 U	0.5 U	0.5 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.73 J	0.77 J	4.4	14	13	2.2	2.2	4.4	0.77 J	15	0.5 U	0.5 U	0.5 U
		Perfluorooctanoic acid (PFOA)	NG/L	0.88 J	0.84 J	5.6	10	7.8	16	17	24	1.1 J	21	0.25 U	0.21 J	0.25 U
		Perfluorononanoic acid (PFNA)	NG/L	0.5 U	0.5 U	0.56 J	1.2 J	0.89 J	0.74 J	0.76 J	0.5 U	0.5 U	2.4	0.5 U	0.5 U	0.5 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.81 J	0.8 J	1.7	2.1	2.6	1 J	1 J	2.5	1.3 J	18	0.44 U	0.3 J	0.44 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.48 J	0.5 J	2.1	2.4	3.2	1.2 J	1.2 J	2.5	0.87 J	29	0.47 U	0.47 U	0.47 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.3	2.2	32	29	34	18	17	12	4.5	230	0.47 U	0.35 J	0.47 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.47 U	0.45 J	0.55 J	0.72 J	0.98 J	0.91 J	0.98 J	0.47 U	6.8	0.47 U	0.47 U	0.47 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.99 J	1.1 J	24	45	42	49	46	65	1.5	280	0.57 J	0.47 U	0.47 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.2 J	3.6 J	2.5 U	5.1 J	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.14 J	0.25 U	0.49 J	0.31 J	0.34 J	3.2	0.16 J	0.25 U	0.25 U	0.25 U	0.25 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.82 J	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	4.7	4.2	8.5	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U

Notes:
N = Normal Field Sample; FD = Field Duplicate
J = Concentration is estimated
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U = Analyte not detected at the associated detection limits
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance

Prepared by: AKN
Date: 11/10/23
Checked by: ALJ
Date: 11/13/23

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3I3214								C3J8311				
			Location	JBW7327		JBW7348		MMW0004		FIELDQC		RFW1145				
			Sample Date	6/19/2023		6/21/2023		6/20/2023		7/3/2023		7/3/2023				
			Sample ID	LORNG_JBW7327_265_06192023		LORNG_JBW7327_265_06192023FD		LORNG_JBW7348_06212023		LORNG_JBW7348_06212023FD		LORNG_MMW0004_06202023		LORNG_EB031_07032023		LORNG_RFW1145_35_07032023		LORNG_RFW1145_75_07032023	
			QC Code	N		FD		N		FD		N		EB		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5.6	J	5.6	J	4.2	J	4.2	J	4.2	J	2	U	45		19	
		Perfluoropentanoic acid (PFPeA)	NG/L	10		11		6.4		6.7		5.7		0.5	U	130		53	
		Perfluorohexanoic acid (PFHxA)	NG/L	11		11		7.4		7.3		5		0.5	U	380		97	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.9		3.9		4.8		4.7		1.6	J	0.5	U	85		28	
		Perfluorooctanoic acid (PFOA)	NG/L	8.9		9.4		5.7		6.1		2.6		0.25	J	450		120	
		Perfluorononanoic acid (PFNA)	NG/L	0.18	J	0.17	J	0.43	J	0.38	J	0.19	J	0.5	U	18		4.1	
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	3.1		0.45	J
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.55	U	0.55	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1.1	U	1.1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1.1	U	1.1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.55	U	0.55	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8		1.8		1.8		1.8		0.53	U	0.35	J	31	J	10	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.6		1.9		2		2		0.3	J	0.47	U	120		24	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	30		34		25		24		2.5		0.48	J	1900		440	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.27	J	0.17	J	0.32	J	0.31	J	0.47	U	0.47	U	90		11	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	11		9.4		24		24		3.8		1	J	2400		510	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	4		1	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.89	J	0.52	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1.1	U	1.1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	2.1	UJ	2.1	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8	J+	7.5	J+	1.9	U	0.89	J	20		1.9	U	97	J	28	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	1.1	J	3.8	U	35	J	11	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	0.25	U	0.25	U	0.48	J	0.94	J	59	J	9.7	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	UJ	1	U	1.1	U	1.1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	UJ	1	U	1.1	U	1.1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1.1	U	1.1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1.1	U	1.1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.8	U	2.8	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5.6	U	5.5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4.4	U	4.4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	4.2	U	4.2	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2.2	U	2.2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.55	U	0.55	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	66	U	66	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	7.3	U	7.3	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	7.3	U	7.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.4	U	3.4	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	9.7	U	9.7	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	34	U	34	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	34	U	34	U

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Checked by: ALJ
Date: 11/13/23

Table 3 - Summary of Qualification Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3D4165	E1633DR	T	VUA675	LORNG_BW10007_05092023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VUA680	LORNG_JMW-0416B_05092023	Perfluorooctane sulfonamide (PFOSA)	0.26	J	0.26	J	CF	NG/L
			VUA681	LORNG_JMW0681_05092023	Perfluorooctane sulfonamide (PFOSA)	0.14	J	0.25	U	CF	NG/L
			VUA682	LORNG_JMW0682_05092023	Perfluorooctane sulfonamide (PFOSA)	0.15	J	0.25	U	CF	NG/L
			VUA683	LORNG_MMW3402R_05092023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.1	J	1.1	J	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	RIS	NG/L
			VUA665	LORNG_OW14004_05092023	Perfluorooctanesulfonic acid (PFOS)	3.6		3.6	J	IAG	NG/L
C3D5831	E1633DR	T	VUJ425	LORNG_BW10006_05102023	Perfluoroheptanesulfonic acid (PFHpS)	0.61	J	0.61	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	J	0.25	U	CF	NG/L
			VUJ428	LORNG_JMW-0602_05102023	Perfluorooctane sulfonamide (PFOSA)	0.48	J	0.48	J	CF	NG/L
			VUJ429	LORNG_JMW-0602_05102023FD	Perfluorooctane sulfonamide (PFOSA)	0.45	J	0.45	J	CF	NG/L
			VUJ438	LORNG_JMW0683_05102023	Perfluorooctane sulfonamide (PFOSA)	2.1		2.1	J	CF	NG/L
			VUJ430	LORNG_JPZ0606_05102023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VUJ439	LORNG_NP_OW001_05102023	Perfluorooctanesulfonic acid (PFOS)	0.56	J	0.56	J	CF	NG/L
			VUJ431	LORNG_OW10005_05102023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VUJ443	LORNG_UNK-044_05102023	Perfluorooctanesulfonic acid (PFOS)	30		30	J	CF	NG/L
C3D9076	E1633DR	T	VVB628	LORNG_BW18009_05112023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VVB640	LORNG_JMW0445_05112023	Perfluorooctane sulfonamide (PFOSA)	0.25	J	0.25	J	CF	NG/L
			VVB632	LORNG_JPZ7808_05112023	Perfluorooctanesulfonic acid (PFOS)	0.53	J	0.53	J	CF	NG/L
			VVB643	LORNG_OW01003_05112023	Perfluorooctanesulfonic acid (PFOS)	0.81	J	0.81	J	IAG	NG/L

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C3E0530	E1633DR	T	VVJ471	LORNG_043-MW03_05162023	Perfluorooctane sulfonamide (PFOSA)	0.18	J	0.18	J	CF	NG/L
C3E2261	E1633DR	T	VVT052	LORNG_BW03002_05162023	Perfluorooctanesulfonic acid (PFOS)	0.37	J	0.47	U	LBL	NG/L
			VVT056	LORNG_JMW0991_05162023	Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	J	CF	NG/L
			VVT060	LORNG_JMW6001_05162023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VVT061	LORNG_JMW6001_05162023FD	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VVT057	LORNG_JMW7916_05162023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VWB328	LORNG_MMW0002_05162023	Perfluorooctanesulfonic acid (PFOS)	0.37	J	0.47	U	LBL	NG/L
C3E2295	E1633DR	T	VVT278	LORNG_OW23001_05162023	Perfluorooctane sulfonamide (PFOSA)	0.29	J	0.29	J	CF	NG/L
			VVT279	LORNG_OW23001_05162023EFF	Perfluorooctane sulfonamide (PFOSA)	0.31	J	0.31	J	CF	NG/L
C3E3943	E1633DR	T	VWB937	LORNG_BW02002_05172023	Perfluorooctane sulfonamide (PFOSA)	0.12	J	0.25	U	CF	NG/L
			VWB938	LORNG_BW07001_05172023	Perfluorooctane sulfonamide (PFOSA)	0.19	J	0.25	U	CF	NG/L
			VWB940	LORNG_LF2MW2_05172023	Perfluorooctane sulfonamide (PFOSA)	0.18	J	0.25	U	CF	NG/L
			VWB941	LORNG_MMW0015_05172023	Perfluorooctanoic acid (PFOA)	0.19	J	0.19	J	IAG	NG/L
			VWB948	LORNG_OW02002_05172023	Perfluorooctane sulfonamide (PFOSA)	0.17	J	0.25	U	CF	NG/L
			VWB949	LORNG_OW07002_05172023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			VWB944	LORNG_OW21005_05172023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.93	J	0.93	J	CF	NG/L
C3E6183	E1633DR	T	VWR000	LORNG_JBW7752_05182023	Perfluorooctanoic acid (PFOA)	0.82	J	0.82	U	LBM	NG/L
			VWQ866	LORNG_LF2MW3_05182023	Perfluorooctanoic acid (PFOA)	0.8	J	0.8	U	LBM	NG/L
C3E9046	E1633DR	T	VXG586	LORNG_JBW7345B_05232023	Perfluorooctane sulfonamide (PFOSA)	0.19	J	0.25	U	CF	NG/L
			VXG592	LORNG_JMW0982_05222023FD	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.72	J	0.72	J	IAG	NG/L
			VXG596	LORNG_MMW0009_05232023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.56	J	0.56	J	IAG	NG/L

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C3F0921	E1633DR	T	VXR237	LORNG_AA11MW-01_05242023	Perfluorooctane sulfonamide (PFOSA)	0.2	J	0.25	U	CF	NG/L
			VXR228	LORNG_JBW7737A_05242023	Perfluorooctane sulfonamide (PFOSA)	0.3	J	0.3	J	IAG	NG/L
			VXR230	LORNG_JBW7737B_05242023	Perfluorooctane sulfonamide (PFOSA)	0.52	J	0.52	J	CF	NG/L
			VXR231	LORNG_JBW7737B_05242023FD	Perfluorooctane sulfonamide (PFOSA)	0.47	J	0.47	J	CF	NG/L
			VXR232	LORNG_MMW0010_05242023	Perfluorooctane sulfonamide (PFOSA)	0.54	J	0.54	J	CF	NG/L
			VXR234	LORNG_MMW0011_05242023	Perfluorooctane sulfonamide (PFOSA)	0.63	J	0.63	J	CF	NG/L
			VXR236	LORNG_OW08002_05242023FD	Perfluorooctane sulfonamide (PFOSA)	6.7		6.7	J	IAG	NG/L
C3F2062	E1633DR	T	VXX529	LORNG_JBW7335B_05252023	Perfluorononanoic acid (PFNA)	0.61	J	0.61	J	IAG	NG/L
C3G5758	E1633DR	T	WAU105	LORNG_AA07MW-02_06052023FD	Perfluorobutanesulfonic acid (PFBS)	48		48	J	RIS	NG/L
			WAU106	LORNG_AA20MW-01_06062023	Perfluorobutanesulfonic acid (PFBS)	36		36	J	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	J	1.8	J	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.53	J	0.53	J	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	RIS	NG/L
			WAU107	LORNG_BW05007_06062023	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	RIS	NG/L
			WAU241	LORNG_BW07003_06062023	Perfluorononanesulfonic acid (PFNS)	0.47	J	0.47	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.9		4.9	J	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	RIS	NG/L
					Perfluorononanesulfonic acid (PFNS)	15		15	J	IAG	NG/L

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C3G5758	E1633DR	T	WAU247	LORNG_OW07001_06062023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	7.1	J	7.1	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.2		8.2	J	RIS, IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	2	U	2	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2	U	2	UJ	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2	U	2	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2	U	2	UJ	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	5	U	5	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	10	U	10	UJ	RIS	NG/L
			WAU248	LORNG_OW07003_06062023	Perfluorononanesulfonic acid (PFNS)	0.35	J	0.35	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	5.8		5.8	J	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	RIS	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	RIS	NG/L
			WAU249	LORNG_UNK-034_180_06062023	Perfluorooctanesulfonic acid (PFOS)	2.9		2.9	J+	LBL	NG/L
C3G7006	E1633DR	T	WBB332	LORNG_BW03001_06072023	Perfluorohexanoic acid (PFHxA)	0.48	J	0.5	U	CF	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.84	J	0.84	U	LBL, FBL	NG/L
			WBB344	LORNG_BW05011D_06072023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	28		28	J+	FBM	NG/L
			WBB340	LORNG_MMW0006_06072023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
			WBB341	LORNG_NP_BW001D_06072023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.97	J	0.97	J	RIS	NG/L

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C3G7006	E1633DR	T	WBB342	LORNG_SB/OW12001_06072023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.9	J	3.9	J	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	RIS	NG/L
C3H0616	E1633DR	T	WBV438	LORNG_AA07MW-01_06092023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	18		18	J	HHL, RIS	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	13		13	J	CF	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL, RIS	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL, RIS	NG/L
			WBV418	LORNG_BW10008_06082023	Perfluorooctanesulfonic acid (PFOS)	3.4		3.4	J+	FBL	NG/L
			WBV422	LORNG_GC_BW0002S_06082023	Perfluorohexanoic acid (PFHxA)	0.17	J	0.5	U	CF	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
			WBV421	LORNG_GC_BW001_06082023	Perfluorooctanoic acid (PFOA)	0.43	J	0.43	J	IAG	NG/L
			WBV424	LORNG_JMW0301C_06082023	Perfluorooctane sulfonamide (PFOSA)	3.5		3.5	J	IAG	NG/L
			WBV436	LORNG_USMW004_06082023FD	Perfluorooctanesulfonic acid (PFOS)	0.95	J	0.95	J	IAG	NG/L
C3H5622	E1633DR	T	WCV976	LORNG_BW18004_06132023	Perfluorobutanoic acid (PFBA)	1.1	J	1.1	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	0.69	J	0.69	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	5		5	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.35	J	0.35	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.4	J	0.4	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L

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C3H5622	E1633DR	T	WCV976	LORNG_BW18004_06132023	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.31	J	0.31	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.52	J	0.52	J	HHL, CF	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.33	J	0.33	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.78	J	0.78	J	HHL, IAG	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	70		70	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L

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C3H5622	E1633DR	T	WCV976	LORNG_BW18004_06132023	Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV965	LORNG_JBW7107_06132023	Perfluorobutanoic acid (PFBA)	1.1	J	1.1	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	2.5	J	2.5	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.58	J	0.58	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.79	J	0.79	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.69	J	0.69	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.41	J	0.41	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.4		2.4	J	HHL	NG/L

Table 3 - Summary of Qualification Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV965	LORNG_JBW7107_06132023	Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.3	UJ	HHL, LBL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.41	J	0.41	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV965	LORNG_JBW7107_06132023	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV966	LORNG_JBW7327_45_06132023	Perfluorobutanoic acid (PFBA)	6.1	J	6.1	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	14		14	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	20		20	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.5		4.5	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	8.5		8.5	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.25	J	0.25	J	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6		1.6	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.5	J	1.5	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	20		20	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	5.1		5.1	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	2.1	J	2.1	J	HHL	NG/L

Table 3 - Summary of Qualification Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV966	LORNG_JBW7327_45_06132023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	460		460	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.4	J	1.4	J	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4		2.4	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV967	LORNG_JBW7335A_06132023	Perfluorobutanoic acid (PFBA)	8.3		8.3	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	15		15	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.7		7.7	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	7.7		7.7	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.64	J	0.64	J	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1		2.1	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6		2.6	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	33		33	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.48	J	0.48	J	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	24		24	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.3		7.3	J+	HHL, FBG	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.9	J	0.9	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV967	LORNG_JBW7335A_06132023	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV983	LORNG_JBW7338B_06132023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	32		32	J+	FBG	NG/L
			WCV968	LORNG_JBW8004B_06132023	Perfluorobutanoic acid (PFBA)	63	J	63	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	200		200	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	390		390	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	130		130	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	350		350	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	25		25	J	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	10	U	10	UJ	HHL	NG/L

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

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C3H5622	E1633DR	T	WCV968	LORNG_JBW8004B_06132023	Perfluoroundecanoic acid (PFUnA)	5	U	5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	10	U	10	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	10	U	10	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	5	U	5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	43		43	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	68		68	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1,700		1,700	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	30		30	J	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1,900		1,900	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	9.4	U	9.4	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	4.7	U	4.7	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	10	U	10	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	19	U	19	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	140		140	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	56	J	56	J	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	44		44	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	10	U	10	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	10	U	10	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10	U	10	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10	U	10	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	25	U	25	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	50	U	50	UJ	HHL	NG/L

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C3H5622	E1633DR	T	WCV968	LORNG_JBW8004B_06132023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	40	U	40	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	38	U	38	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	20	U	20	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	5	U	5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	600	U	600	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	66	U	66	UJ	HHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	66	U	66	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	88	U	88	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	310	U	310	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	310	U	310	UJ	HHL	NG/L
			WCV970	LORNG_MMW0020_150_06132023	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	0.13	J	0.13	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.22	J	0.22	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	U	0.44	UJ	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.84	J	0.84	J	HHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV970	LORNG_MMW0020_150_06132023	Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.46	J	0.46	UJ	HHL, LBL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.47	J	0.47	J	HHL, CF	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L

Table 3 - Summary of Qualification Actions

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV970	LORNG_MMW0020_150_06132023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV971	LORNG_MMW0020_60_06132023	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.14	J	0.14	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	U	0.44	UJ	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.73	J	0.73	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.42	J	0.42	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV971	LORNG_MMW0020_60_06132023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV972	LORNG_MMW0020_60_06132023FD	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.23	J	0.23	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	U	0.44	UJ	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.75	J	0.75	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5622	E1633DR	T	WCV972	LORNG_MMW0020_60_06132023FD	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV973	LORNG_MMW0132_06122023	Perfluorobutanoic acid (PFBA)	7		7	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	15		15	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	6.3		6.3	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.9		2.9	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

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C3H5622	E1633DR	T	WCV973	LORNG_MMW0132_06122023	Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.48	J	0.48	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.63	J	0.63	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	26		26	J	HHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.7	J	3.7	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.4	J	1.4	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L

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C3H5622	E1633DR	T	WCV973	LORNG_MMW0132_06122023	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
			WCV974	LORNG_OW01004_06122023	Perfluorobutanoic acid (PFBA)	44		44	J	HHL	NG/L
					Perfluoropentanoic acid (PFPeA)	130		130	J	HHL	NG/L
					Perfluorohexanoic acid (PFHxA)	190		190	J	HHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	98		98	J	HHL	NG/L
					Perfluorooctanoic acid (PFOA)	180		180	J	HHL	NG/L
					Perfluorononanoic acid (PFNA)	16		16	J	HHL	NG/L
					Perfluorodecanoic acid (PFDA)	0.83	J	0.83	J	HHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	HHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	28		28	J	HHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	44		44	J	HHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	920		920	J	HHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	19		19	J	HHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1,200		1,200	J	HHL	NG/L

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C3H5622	E1633DR	T	WCV974	LORNG_OW01004_06122023	Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	HHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	HHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.6	J	0.6	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	76		76	J	HHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	69		69	J	HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	17		17	J	HHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	HHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	HHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	HHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	HHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	HHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	HHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	HHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	HHL	NG/L

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C3H5622	E1633DR	T	WCV974	LORNG_OW01004_06122023	3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	HHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	HHL	NG/L
C3H5740	E1633DR	T	WCW598	LORNG_BSMW3S_06142023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.6	J	1.6	J	IAG	NG/L
			WCW606	LORNG_BW02001_06142023	Perfluorooctane sulfonamide (PFOSA)	0.86	J	0.86	U	LBL	NG/L
			WCW600	LORNG_JBW7327_158_06142023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4	J	4	U	FBL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.63	J	0.63	UJ	LBL, FDD	NG/L
			WCW601	LORNG_JBW7327_158_06142023FD	Perfluorooctane sulfonamide (PFOSA)	2.6		2.6	J	FDD	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	RIS	NG/L
			WCW602	LORNG_JBW7339A_06142023	Perfluoropentanoic acid (PFPeA)	76		76	J	CFHD	NG/L
					Perfluorononanoic acid (PFNA)	3.1		3.1	J	CFHD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	14		14	J	CFHD	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	23		23	J	CFHD	NG/L
					Perfluorooctanesulfonic acid (PFOS)	290		290	J	CFHD	NG/L
					Perfluorooctane sulfonamide (PFOSA)	12		12	J	CFHD	NG/L
			WCW610	LORNG_JBW7711_06142023	Perfluorooctane sulfonamide (PFOSA)	1.3	J	1.3	U	LBL	NG/L
			WCW604	LORNG_JBW8003B_06142023	Perfluoropentanoic acid (PFPeA)	83		83	J	CFHD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	27		27	J	CFHD	NG/L
					Perfluorooctane sulfonamide (PFOSA)	22		22	J	CF, CFHD	NG/L
			WCW611	LORNG_JMW0880_06142023	Perfluorononanoic acid (PFNA)	0.24	J	0.24	J	IAG	NG/L
			WCW618	LORNG_LYS01007D_06142023	3-Perfluoropropyl propanoic acid (3:3FTCA)	88	U	88	UJ	HHL	NG/L
			WCW619	LORNG_LYS01007S_06142023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	19	U	19	UJ	RIS, HHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	46		46	J	CF	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	88	U	88	UJ	HHL	NG/L
			WCW612	LORNG_LYS05012D_06142023	N-methyl perfluorooctanesulfonamide (NMeFOSA)	100	U	100	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L

Table 3 - Summary of Qualification Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5740	E1633DR	T	WCW613	LORNG_LYS05012S_06142023	3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L
			WCW614	LORNG_LYS07007D_06142023	Perfluorobutanoic acid (PFBA)	830		830	J	FDD	NG/L
					Perfluoropentanoic acid (PFPeA)	4,000		4,000	J	FDD	NG/L
					Perfluorohexanoic acid (PFHxA)	4,500		4,500	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	2,000		2,000	J	FDD	NG/L
					Perfluorooctanoic acid (PFOA)	5,500		5,500	J	FDD	NG/L
					Perfluorononanoic acid (PFNA)	150	J	150	J	FDD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3,200		3,200	J	FDD	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	340		340	J	FDD	NG/L
					Perfluorooctanesulfonic acid (PFOS)	9,400		9,400	J	FDD	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	19,000		19,000	J	FDD	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L
			WCW620	LORNG_LYS07007DDUP_06142023	Perfluorobutanoic acid (PFBA)	1,400		1,400	J	FDD	NG/L
					Perfluoropentanoic acid (PFPeA)	6,800		6,800	J	FDD	NG/L
					Perfluorohexanoic acid (PFHxA)	7,300		7,300	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	3,700		3,700	J	FDD	NG/L
					Perfluorooctanoic acid (PFOA)	9,900		9,900	J	FDD	NG/L
					Perfluorononanoic acid (PFNA)	520		520	J	FDD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	5,700		5,700	J	FDD	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3,100		3,100	J	FDD	NG/L
					Perfluorooctanesulfonic acid (PFOS)	36,000		36,000	J	FDD	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	31,000		31,000	J	FDD	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L
			WCW621	LORNG_LYS07007S_06142023	Perfluorobutanoic acid (PFBA)	1,900		1,900	J	FDD	NG/L
					Perfluoropentanoic acid (PFPeA)	6,800		6,800	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	2,400		2,400	J	FDD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3H5740	E1633DR	T	WCW621	LORNG_LYS07007S_06142023	Perfluorooctanoic acid (PFOA)	2,500		2,500	J	FDD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1,800		1,800	J	FDD	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3,000		3,000	J	FDD	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	19,000		19,000	J	FDD	NG/L
					Perfluorohexanoic acid (PFHxA)	4,500		4,500	J	FDD	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	190	U	190	UJ	HHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L
			WCW622	LORNG_LYS07007SDUP_06142023	Perfluorobutanoic acid (PFBA)	1,100		1,100	J	FDD	NG/L
					Perfluoropentanoic acid (PFPeA)	4,100		4,100	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	1,300		1,300	J	FDD	NG/L
					Perfluorooctanoic acid (PFOA)	1,400		1,400	J	FDD	NG/L
					Perfluorobutanesulfonic acid (PFBS)	800		800	J	FDD	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1,300		1,300	J	FDD	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	9,600		9,600	J	FDD	NG/L
					Perfluorohexanoic acid (PFHxA)	3,000		3,000	J	FDD	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	880	U	880	UJ	HHL	NG/L
			WCW615	LORNG_MMW8015_06142023	3-Perfluoropropyl propanoic acid (3:3FTCA)	88	U	88	UJ	HHL	NG/L
			WCW623	LORNG_ND40IDWEFF_06152023	3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	HHL	NG/L
			WCW624	LORNG_ND40IDWINF_06152023	3-Perfluoropropyl propanoic acid (3:3FTCA)	11	U	11	UJ	HHL	NG/L
			WCW605	LORNG_OW24001_06142023	Perfluorooctane sulfonamide (PFOSA)	0.65	J	0.65	U	LBL	NG/L
C3H9763	E1633DR	T	WDS691	LORNG_BW13003_06152023FD	Perfluoroheptanesulfonic acid (PFHpS)	0.2	J	0.2	J	IAG	NG/L
			WDS696	LORNG_GC_BW002D_06152023	Perfluorooctanesulfonic acid (PFOS)	0.43	J	0.47	U	FBL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.1	J	4.1	U	FBL	NG/L
			WDS684	LORNG_JBW7336A_06152023	Perfluoroheptanesulfonic acid (PFHpS)	0.45	J	0.45	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.14	J	0.14	J	IAG	NG/L
			WDS699	LORNG_JMW0882_06152023FD	Perfluorooctane sulfonamide (PFOSA)	0.34	J	0.34	J	IAG	NG/L
			WDS688	LORNG_UNK-033_06152023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.5	J	2.5	U	FBL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3I3214	E1633DR	T	WEL015	LORNG_JBW7327_265_06192023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	8		8	J+	FBL	NG/L
			WEL016	LORNG_JBW7327_265_06192023FD	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.5		7.5	J+	FBL	NG/L
			WEL019	LORNG_MMW0004_06202023	Perfluorobutanesulfonic acid (PFBS)	0.53	J	0.53	U	FBL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.48	J	0.48	J	IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HHL	NG/L
C3J8311	E1633DR	T	WHO076	LORNG_RFW1145_35_07032023	Perfluorobutanesulfonic acid (PFBS)	31		31	J	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	2.1	U	2.1	UJ	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	97		97	J	RIS	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	35		35	J	RIS	NG/L
					Perfluorooctane sulfonamide (PFOSA)	59		59	J	RIS, IAG	NG/L
			WHO077	LORNG_RFW1145_75_07032023	Perfluorooctane sulfonamide (PFOSA)	9.7		9.7	J	IAG	NG/L

Notes:

J = Concentration is estimated
J+ = Concentration is estimated, potentially biased high
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and considered estimated
CF = Ion abundance ratio not found
CFHD = Split sample RPD criteria exceeded
FBG = Field blank contamination greater than reporting limit
FBL = field blank contamination less than reporting limit
FDD = Field duplicate relative percent difference (RPD) criteria exceeded
HHL = Sampling to extraction holding time exceeded
IAG = Ion abundance ratio outside calculated limits
LBL = laboratory blank contamination less than reporting limit
LBM = laboratory blank contamination greater than method detection limit
RIS = Extracted internal standard recovery outside control limits
NG/L = nanograms per liter

Prepared by:AKN
Date:11/10/23
Checked by: ALJ
Date: 11/13/23

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3D4165	LORNG_OW20004_05082023	LORNG_OW20004_05082023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.31	J	0.39	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.34	J	0.4	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.74	J	0.62	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.82	J	0.84	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	7.7		8.2		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.19	J	0.24	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	7.5		9.5		24	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3D4165	LORNG_SB/OW16001_05082023	LORNG_SB/OW16001_05082023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.7	J	4.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.6		3.8		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	5.5		5.8		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.4		2.4		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.8		6.8		0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.3	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.2	J	1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.74	J	0.8	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	13		14		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.18	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	12		12		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2	J	2.5	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3D5831	LORNG_AA20MW-02_05102023	LORNG_AA20MW-02_05102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	14		14		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	27		27		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	76		79		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	19		19		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	33		33		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.55	J	0.56	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	94		98		4	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	130		120		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	780		750		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.3		5.6		6	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	110		110		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	0.96	J	1.1	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3D5831	LORNG_BW10006_05102023	LORNG_BW10006_05102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.1	J	4	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6		6		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.4		7.9		6	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.1		3		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.5		8.5		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.36	J	0.32	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.3		2.3		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.8		2.9		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	41		41		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.61	J	0.57	J	NC	IAG
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	38		35		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.23	J	NC	CF
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3D5831	LORNG_JMW-0602_05102023	LORNG_JMW-0602_05102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.5	J	2.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.2	J	2.3	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.9		3.8		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.5	J	1.6		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.8		5.8		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.24	J	0.26	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.4	J	1.4		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.5		1.6		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	22		23		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	J	0.5	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	25		25		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.48	J	0.45	J	NC	CF
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E2261	LORNG_JMW6001_05162023	LORNG_JMW6001_05162023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	13		11		17	
				Perfluoropentanoic acid (PFPeA) (NG/L)	9.7		7.9		20	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.3		6		20	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6		4.7		24	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.1		4.1		22	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9		1.6	J	17	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.57	J	0.53	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.38	J	0.32	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	6.5		5		26	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.24	J	0.18	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	16		15		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	RIS
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E3943	LORNG_OW21005_05172023	LORNG_OW21005_05172023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.6	J	3.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.1		7.4		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.6		9.4		9	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.5		3.8		8	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.7		5.9		3	
				Perfluorononanoic acid (PFNA) (NG/L)	0.52	J	0.58	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8		1.9		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2		2.1		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	30		32		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.36	J	0.38	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	30		32		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	U	NC	RIS
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.93	J	0.92	J	NC	CF
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E6183	LORNG_LF3MW3_05182023	LORNG_LF3MW3_05182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.25	U	0.25	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.44	U	0.44	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E6183	LORNG_OW09001_05182023	LORNG_OW09001_05182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	7		6.3	J	11	
				Perfluoropentanoic acid (PFPeA) (NG/L)	18		16		12	
				Perfluorohexanoic acid (PFHxA) (NG/L)	26		23		12	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	9.4		8.3		12	
				Perfluorooctanoic acid (PFOA) (NG/L)	25		22		13	
				Perfluorononanoic acid (PFNA) (NG/L)	1	J	0.89	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.8		3.4		11	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.9		4.5		9	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	160		130		21	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	78		68		14	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	3.1		2.8		10	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E9046	LORNG_JBW7347B_05222023	LORNG_JBW7347B_05222023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.4	J	3.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.8		5.2		8	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.6		4.8		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.4		2.6		8	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.5		6		9	
				Perfluorononanoic acid (PFNA) (NG/L)	0.27	J	0.3	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.6		1.7		6	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2		2		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	31		32		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.36	J	0.33	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	16		16		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.21	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E9046	LORNG_JBW7350_05232023	LORNG_JBW7350_05232023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.5	J	3.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.4		6.4		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.5		8.4		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.1		5.1		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.7		7.9		3	
				Perfluorononanoic acid (PFNA) (NG/L)	0.36	J	0.35	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7		1.7		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9		2		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	24		24		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.3	J	0.27	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	13		14		7	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.15	J	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.52	J	0.82	J	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E9046	LORNG_JBW7734_05232023	LORNG_JBW7734_05232023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5	J	5.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.6		7.7		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	9.5		9.5		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.1		6.2		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.6		7.9		4	
				Perfluorononanoic acid (PFNA) (NG/L)	0.76	J	0.85	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.4		2.6		8	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.5		3.6		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	51		52		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.3	J	1.2	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	65		66		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.36	J	0.45	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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C3E9046	LORNG_JMW0982_05222023	LORNG_JMW0982_05222023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.8	J	2.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.2		4.1		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.3		8.2		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.1		2.9		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	10		10		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.62	J	0.52	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.81	J	0.76	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.97	J	1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	12		12		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.29	J	0.29	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	19		19		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.8	J	1.8	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.1	J	0.96	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	2.4		2.1		13	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.75	J	0.72	J	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3E9046	LORNG_JMW1684_05222023	LORNG_JMW1684_05222023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.9	J	4.9	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.9		7		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.6		6.7		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.4		4.7		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.8		5		4	
				Perfluorononanoic acid (PFNA) (NG/L)	0.47	J	0.45	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.9		3		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.5		3.4		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	31		32		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.63	J	0.53	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	34		33		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F0921	LORNG_JBW7737A_05242023	LORNG_JBW7737A_05242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	13		12		8	
				Perfluoropentanoic acid (PFPeA) (NG/L)	31		30		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	47		45		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	12		11		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	17		16		6	
				Perfluorononanoic acid (PFNA) (NG/L)	0.8	J	0.66	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	21		20		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	21		22		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	120		110		9	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	6.6		6.4		3	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	260		280		7	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	4.8	J	3.9	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.3	J	0.25	U	NC	IAG
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F0921	LORNG_JBW7737B_05242023	LORNG_JBW7737B_05242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	9.3		9.3		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	20		20		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	26		26		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	12		12		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	15		15		0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.2	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	10		11		10	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	13		13		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	120		110		9	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	4.8		4.5		6	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	270		250		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	0.82	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.52	J	0.47	J	NC	CF
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F0921	LORNG_MMW0007A_05242023	LORNG_MMW0007A_05242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.7	J	2.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.6		5.7		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.5		4.6		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.2		2.2		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.4		2.6		8	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.18	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.86	J	0.95	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.71	J	0.8	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	7.4		7.9		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	7.4		7.5		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F0921	LORNG_MMW0010_05242023	LORNG_MMW0010_05242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	7.9		7.9		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	20		19		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	19		19		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	12		12		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	14		15		7	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.1	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.8		3.8		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.3		4.4		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	59		59		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	77		77		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.54	J	0.71	J	NC	CF
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F0921	LORNG_OW08002_05242023	LORNG_OW08002_05242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	20		20		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	65		67		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	74		81		9	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	29		29		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	78		83		6	
				Perfluorononanoic acid (PFNA) (NG/L)	3.4		3.2		6	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	12		12		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	17		16		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	310		320		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.1		4.9		4	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	240		260		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	12		12		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	6.4		6.7	J	5	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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Loring PFAS Remedial Investigation
Spring 2023 Sampling
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F2062	LORNG_OW05003_05252023	LORNG_OW05003_05252023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	21		21		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	71		71		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	40		41		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	31		30		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	28		27		4	
				Perfluorononanoic acid (PFNA) (NG/L)	6.7		6.4		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	14		14		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	27		27		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	240		270		12	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	11		11		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	470		530		12	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	13		13		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3F2062	LORNG_USMW025_05252023	LORNG_USMW025_05252023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.1	J	3.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.9	J	3	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.1		3.2		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.2		2.3		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.3		5.3		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.48	J	0.49	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.89	J	0.98	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.85	J	0.89	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	31		31		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.29	J	0.29	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	15		16		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3G5758	LORNG_AA07MW-02_06052023	LORNG_AA07MW-02_06052023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	60		59		2	
				Perfluoropentanoic acid (PFPeA) (NG/L)	220		220		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	250		260		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	90		87		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	290		280		4	
				Perfluorononanoic acid (PFNA) (NG/L)	11		11		0	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.83	J	0.9	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	48		48	J	0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	90		88		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	920		920		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	29		30		3	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1,000		1,000		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	15		14		7	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	670		670		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	59		62		5	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	32		34		6	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3G5758	LORNG_BW06007_06062023	LORNG_BW06007_06062023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	87		89		2	
				Perfluoropentanoic acid (PFPeA) (NG/L)	270		290		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	140		150		7	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	150		160		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	85		82		4	
				Perfluorononanoic acid (PFNA) (NG/L)	17		18		6	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.4	J	1.4	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	9.9		10		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	13		13		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	100		100		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.5		3.6		3	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	190		190		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.5	J	1.5	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	220		220		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	75		75		0	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	3.9		3.6		8	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

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Loring PFAS Remedial Investigation
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3G5758	LORNG_OW05002_06062023	LORNG_OW05002_06062023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	32		31		3	
				Perfluoropentanoic acid (PFPeA) (NG/L)	120		120		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	120		120		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	66		65		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	130		130		0	
				Perfluorononanoic acid (PFNA) (NG/L)	22		23		4	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	82		77		6	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	110		100		10	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	900		870		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	28		30		7	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	900		890		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	110		120		9	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5.6	J	6.3		12	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.1		2.2		5	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H0616	LORNG_USMW004_06082023	LORNG_USMW004_06082023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	U	2	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.25	U	0.28	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.44	U	0.16	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.47	U	0.95	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H5622	LORNG_MMW0020_60_06132023	LORNG_MMW0020_60_06132023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	UJ	2	UJ	NC	HHL
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluorooctanoic acid (PFOA) (NG/L)	0.14	J	0.23	J	NC	HHL
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	HHL
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	HHL
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	HHL
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.44	UJ	0.44	UJ	NC	HHL
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	UJ	0.47	UJ	NC	HHL
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	0.73	J	0.75	J	NC	HHL
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	UJ	0.47	UJ	NC	HHL
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.42	J	0.47	UJ	NC	HHL
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	HHL
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	HHL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	HHL
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	HHL
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	HHL
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	HHL
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	UJ	0.25	UJ	NC	HHL
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	1	UJ	NC	HHL
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	1	UJ	NC	HHL
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	HHL
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	HHL
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	2.5	UJ	NC	HHL
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	5	UJ	NC	HHL
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	HHL
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	HHL
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	UJ	NC	HHL
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	0.5	UJ	NC	HHL
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	HHL
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	HHL
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	HHL
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	HHL
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	HHL
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	HHL
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	HHL

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H5740	LORNG_JBW7327_158_06142023	LORNG_JBW7327_158_06142023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.5	J	5.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	11		11		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	10		11		10	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.6		3.4		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.2		8.3		1	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.34	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	0.58	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.48	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	0.42	J	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	J	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.6		1.4		13	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.2	J	1.4	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	21		22		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.16	J	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	5.7		5.4		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	4	U	4	J	NC	FBL
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.63	UJ	2.6	J	NC	LBL, FDD
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	4.6	J	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5.8	J	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H9763	LORNG_BW01008_06152023	LORNG_BW01008_06152023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.2	J	4.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	10		11		10	
				Perfluorohexanoic acid (PFHxA) (NG/L)	16		17		6	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.6		5.3		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	26		23		12	
				Perfluorononanoic acid (PFNA) (NG/L)	0.86	J	0.86	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.7		3.8		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	5.8		5.4		7	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	120		110		9	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.1	J	0.97	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	60		59		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H9763	LORNG_BW13003_06152023	LORNG_BW13003_06152023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6.7		5.9	J	13	
				Perfluoropentanoic acid (PFPeA) (NG/L)	12		10		18	
				Perfluorohexanoic acid (PFHxA) (NG/L)	11		9		20	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	14		12		15	
				Perfluorooctanoic acid (PFOA) (NG/L)	14		13		7	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9		2		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1		1.8		15	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2		1.5		29	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15		12		22	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.37	J	0.2	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	13		18		32	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H9763	LORNG_JBW7105_06152023	LORNG_JBW7105_06152023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.3	J	1.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.1	J	3.2	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2		1.8		11	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.73	J	0.77	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.88	J	0.84	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.81	J	0.8	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.48	J	0.5	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.3		2.2		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.99	J	1.1	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H9763	LORNG_JMW0882_06152023	LORNG_JMW0882_06152023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3	J	2.9	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	J	1.7	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.7		5		6	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.2		2.2		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	16		17		6	
				Perfluorononanoic acid (PFNA) (NG/L)	0.74	J	0.76	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	J	1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.2	J	1.2	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	18		17		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.98	J	0.91	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	49		46		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.31	J	0.34	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.7		4.2		11	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3I3214	LORNG_JBW7327_265_06192023	LORNG_JBW7327_265_06192023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.6	J	5.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	10		11		10	
				Perfluorohexanoic acid (PFHxA) (NG/L)	11		11		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.9		3.9		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.9		9.4		5	
				Perfluorononanoic acid (PFNA) (NG/L)	0.18	J	0.17	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8		1.8		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.6		1.9		17	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	30		34		12	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.27	J	0.17	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	11		9.4		16	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8	J+	7.5	J+	6	FBL
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3I3214	LORNG_JBW7348_06212023	LORNG_JBW7348_06212023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.2	J	4.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.4		6.7		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.4		7.3		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.8		4.7		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.7		6.1		7	
				Perfluorononanoic acid (PFNA) (NG/L)	0.43	J	0.38	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8		1.8		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2		2		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	25		24		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.32	J	0.31	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	24		24		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	0.89	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H5740	LORNG_LYS07007D_06142023	LORNG_LYS07007DDUP_06142023	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	830	J	1,400	J	51.12	FDD
				Perfluoropentanoic acid (PFPeA) (NG/L)	4,000	J	6,800	J	51.85	FDD
				Perfluorohexanoic acid (PFHxA) (NG/L)	4,500	J	7,300	J	47.46	FDD
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2,000	J	3,700	J	59.65	FDD
				Perfluorooctanoic acid (PFOA) (NG/L)	5,500	J	9,900	J	57.14	FDD
				Perfluorononanoic acid (PFNA) (NG/L)	150	J	520	J	110.4	FDD
				Perfluorodecanoic acid (PFDA) (NG/L)	100	U	100	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	50	U	50	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	100	U	100	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	100	U	100	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	50	U	50	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3,200	J	5,700	J	56.18	FDD
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	6,700		8,200		20.13	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	67,000		86,000		24.84	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	340	J	3100	J	160.5	FDD
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	9,400	J	36,000	J	117.2	FDD
				Perfluorononanesulfonic acid (PFNS) (NG/L)	94	U	94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	47	U	47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	100	U	100	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	170	J	320	J	61.22	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	19,000	J	31,000	J	48	FDD
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	380	U	380	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	25	U	25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	100	U	100	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	100	U	100	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	100	U	100	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	100	U	100	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	250	U	250	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	500	U	500	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	400	U	400	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	380	U	380	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	200	U	200	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	50	U	50	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	6,000	U	6,000	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	660	U	660	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	660	U	660	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	310	U	310	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	880	UJ	880	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	3,100	U	3,100	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	3,100	U	3,100	U	NC	

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Data Validation and Usability Report
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3H5740	LORNG_LYS07007S_06142023	LORNG_LYS07007SDUP_06142023	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1,900	J	1,100	J	53.33	FDD
				Perfluoropentanoic acid (PFPeA) (NG/L)	6,800	J	4,100	J	49.54	FDD
				Perfluorohexanoic acid (PFHxA) (NG/L)	4,500	J	3,000	J	40	FDD
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2,400	J	1,300	J	59.46	FDD
				Perfluorooctanoic acid (PFOA) (NG/L)	2,500	J	1,400	J	56.41	FDD
				Perfluorononanoic acid (PFNA) (NG/L)	530		490		7.843	
				Perfluorodecanoic acid (PFDA) (NG/L)	100	U	100	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	50	U	50	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	100	U	100	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	100	U	100	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	50	U	50	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1,800	J	800	J	76.92	FDD
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3,000	J	1,300	J	79.07	FDD
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	19,000	J	9,600	J	65.73	FDD
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1,100		1,200		8.696	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	76,000		96,000		23.26	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	94	U	94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	47	U	47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	100	U	100	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	190	UJ	97	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	4,800		4,400		8.696	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	380	U	180	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	25	U	25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	100	U	100	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	100	U	100	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	100	U	100	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	100	U	100	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	250	U	250	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	500	U	500	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	400	U	400	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	380	U	380	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	200	U	200	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	50	U	50	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	6,000	U	6,000	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	660	U	660	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	660	U	660	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	310	U	310	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	880	UJ	880	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	3,100	U	3,100	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	3,100	U	3,100	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and considered estimated

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

NG/L = nanograms per liter

UG/L = micrograms per liter

RPD = relative percent difference

SDG = Sample Delivery Group

Prepared by: AKN 11/10/23
Checked by: ALJ 11/13/23

Table 5 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
BV	Bureau Veritas
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP Environment & Infrastructure

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/L)	Qualifier	Secondary (ug/L)	Qualifier	RPD	Flag
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorobutanoic acid (PFBA)	24		22.9		5	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoropentanoic acid (PFPeA)	76	J	53.8		34	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorohexanoic acid (PFHxA)	99		91.8		8	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoroheptanoic acid (PFHpA)	34		30.8		10	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorooctanoic acid (PFOA)	110		89		21	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorononanoic acid (PFNA)	3.1	J	2.2	J	34	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorodecanoic acid (PFDA)	0.38		1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoroundecanoic acid (PFUnA)	0.5	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorododecanoic acid (PFDoA)	1	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorotridecanoic acid (PFTrDA)	1	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorotetradecanoic acid (PFTeDA)	0.5	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorobutanesulfonic acid (PFBS)	14	J	9.9		34	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoropentanesulfonic acid (PFPeS)	23	J	15.9		37	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorohexanesulfonic acid (PFHxS)	450		377		18	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoroheptanesulfonic acid (PFHpS)	6.1		7.4		19	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorooctanesulfonic acid (PFOS)	290	J	208		33	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorononanesulfonic acid (PFNS)	0.94	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorodecanesulfonic acid (PFDS)	0.47	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorododecanesulfonic acid (PFDoS)	1	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	7.5	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	38		30.9		21	
LORNG_JBW7339A_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1		7.5	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluorooctane sulfonamide (PFOSA)	12		1.9	U	145	**CFDH**
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	19	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	19	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	3.8	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	3.7	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	1.9	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	9.3	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	19	U	NC	
LORNG_JBW7339A_06142023	C3H5740	FC7096	3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	19	U	NC	

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Checked by: JAR 2/19/2024

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/L)	Qualifier	Secondary (ug/L)	Qualifier	RPD	Flag
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorobutanoic acid (PFBA)	32		29.4		8	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoropentanoic acid (PFPeA)	83	J	57.1		37	**CFDH**
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorohexanoic acid (PFHxA)	210		195		7	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoroheptanoic acid (PFHpA)	70		64.2		9	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorooctanoic acid (PFOA)	200		166		19	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorononanoic acid (PFNA)	18		16.9		6	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorodecanoic acid (PFDA)	10	U	1.3	J	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoroundecanoic acid (PFUnA)	5	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorododecanoic acid (PFDoA)	10	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorotridecanoic acid (PFTrDA)	10	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorotetradecanoic acid (PFTeDA)	5	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorobutanesulfonic acid (PFBS)	27	J	18.7		36	**CFDH**
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoropentanesulfonic acid (PFPeS)	32		30.5		5	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorohexanesulfonic acid (PFHxS)	1,100		838		27	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoroheptanesulfonic acid (PFHpS)	15		18.5		21	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorooctanesulfonic acid (PFOS)	1,400		1,170		18	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorononanesulfonic acid (PFNS)	9.4	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorodecanesulfonic acid (PFDS)	4.7	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorododecanesulfonic acid (PFDoS)	10	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	19	U	7.4	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	27		21.9		21	
LORNG_JBW8003B_06142023	C3H5740	FC7096	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	30		22.2		NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluorooctane sulfonamide (PFOSA)	22	J	14.6		40	**CFDH**
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamide (NMeFOSA)	10	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	10	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	25	U	19	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	50	U	19	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Hexafluoropropylene oxide dimer acid (HFPO-DA)	40	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	38	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoro-3-methoxypropanoic acid (PFMPA)	20	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoro-4-methoxybutanoic acid (PFMBA)	5	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	600	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	66	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	66	U	3.7	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	31	U	1.9	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	3-Perfluoropropyl propanoic acid (3:3FTCA)	88	U	9.3	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	310	U	19	U	NC	
LORNG_JBW8003B_06142023	C3H5740	FC7096	3-Perfluoroheptyl propanoic acid (7:3FTCA)	310	U	19	U	NC	

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Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/L)	Qualifier	Secondary (ug/L)	Qualifier	RPD	Flag
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorobutanoic acid (PFBA)	3		4.7	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoropentanoic acid (PFPeA)	1.8		1.9	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorohexanoic acid (PFHxA)	4.7		4.2		11	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoroheptanoic acid (PFHpA)	2.2		2.2	J	0	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorooctanoic acid (PFOA)	16		15.3		4	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorononanoic acid (PFNA)	0.74		0.89	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorodecanoic acid (PFDA)	1	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoroundecanoic acid (PFUnA)	0.5	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorododecanoic acid (PFDoA)	1	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorotridecanoic acid (PFTrDA)	1	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorotetradecanoic acid (PFTeDA)	0.5	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorobutanesulfonic acid (PFBS)	1		0.77	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoropentanesulfonic acid (PFPeS)	1.2		1.1	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorohexanesulfonic acid (PFHxS)	18		15.9		12	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoroheptanesulfonic acid (PFHpS)	0.98		1.9	J	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorooctanesulfonic acid (PFOS)	49		53.9		10	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorononanesulfonic acid (PFNS)	0.94	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorodecanesulfonic acid (PFDS)	0.47	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorododecanesulfonic acid (PFDoS)	1	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	38	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	7.7	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	7.7	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluorooctane sulfonamide (PFOSA)	0.31		1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7		6.1		26	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	19	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	19	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	3.8	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	1.9	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	9.6	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	19	U	NC	
LORNG_JMW0882_06152023	C3H9763	FC7096	3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	19	U	NC	

Created by: ALJ 12/15/2023
Checked by: JAR 2/19/2024

Table 6 - Interlaboratory Comparison Assessment Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Spring 2023 Sampling
Former Loring Air Force Base, Limestone, Maine

Sample ID	Primary Lab SDG	Secondary Lab SDG	Analyte	Primary (ug/L)	Qualifier	Secondary (ug/L)	Qualifier	RPD	Flag

Notes:
1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ
U = Analyte not detected at the associated detection limits
J = Concentration is estimated
NC = RPD not calculated; values less than LOQ
RPD = relative percent difference
SDG = Sample Delivery Group
ug/L = micrograms per liter
CFHD = Split sample RPD criteria exceeded

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
November 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Two residential samples were collected at the Former Loring Air Force Base in Limestone, Maine, in November 2023 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. The samples were submitted to Bureau Veritas (BV) in Mississauga, Ontario, for analysis.

BV analyzed two samples for PFAS by United States Environmental Protection Agency (USEPA) Draft Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2023). Data validation levels are established based on current USEPA guidelines for staged validation of analytical data (USEPA, 2009) and USDoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on USDoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2023), and method specifications in the DoD QSM 5.4 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.4 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

IAG = Ion abundance ratio outside calculated limits

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

The transition ion ratio for perfluorobutanesulfonic acid (PFBS) in sample LORNG_RES40_11092023 did not meet the acceptance criteria. The result for PFBS is considered estimated and data usability was not impacted.

Of the 80 individual PFAS results reported for the groundwater event, a total of zero results were qualified as rejected (R) and were interpreted to be unusable for project objectives. This represents a PFAS data completeness of 100% for the residential data set.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* Field/Lab Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Compound Identification and Quantitation

The transition ion ratio for PFBS in sample LORNG_RES40_11092023 did not meet the acceptance criteria. The result for PFBS in sample LORNG_RES40_11092023 was qualified as estimated (J).

Reference:

WSP Environment & Infrastructure Solutions, Inc. (WSP), 2023. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; September 2023.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2023. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples By LC-MS/MS; EPA 821-D-23-001. July, 2023.

Data Validation: Amber Jones



January 3, 2024

Reviewed by: Julie Ricardi



January 4, 2024

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
November 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3Z4688	RES07	LORNG_RES07_11102023	XOP815	11/10/2023	WP	N	40
	RES40	LORNG_RES40_11092023	XOP816	11/9/2023	WP	N	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/3/2024
Checked by: ALJ
Date: 1/3/2024

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
November 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C3Z4688			
			Location	RES07		RES40	
			Sample Date	11/10/2023		11/9/2023	
			Sample ID	LORNG_RES07_11102023		LORNG_RES40_11092023	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.9	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.25	J	0.51	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.4	J	0.51	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.49	U	0.51	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.7	J	0.2	J
		Perfluorononanoic acid (PFNA)	NG/L	0.49	U	0.51	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.97	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.49	U	0.51	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.97	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.97	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.49	U	0.51	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.41	J	0.17	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47	J	0.48	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.1		0.48	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.21	J	0.48	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19		1.6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.91	U	0.96	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.46	U	0.48	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.97	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.8	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.8	U	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.7	U	3.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.24	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.97	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.97	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.97	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.97	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.4	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.9	U	5.1	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.9	U	4.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.49	U	0.51	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	58	U	61	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.4	U	6.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.4	U	6.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3	U	3.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.6	U	9	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	30	U	32	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	30	U	32	U

Prepared by: AKN
Date: 1/3/2024
Checked by: ALJ
Date: 1/3/2024

Table 3 - Summary of Data Validation Actions

Data Validation and Usability Report
Loring PFAS Remedial Investigation
November 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Z4688	E1633DR	T	XOP816	LORNG_RES40_11092023	Perfluorobutanesulfonic acid (PFBS)	0.17	J	0.17	J	IAG	NG/L

Prepared by:AKN
Date:1/3/2024
Checked by: ALJ
Date: 1/3/2024

Table 4 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
November 2023 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
BV	Bureau Veritas
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP Environment & Infrastructure

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

APRIL 15, 2024

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
Bureau Veritas	Bureau Veritas Canada
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
EtFOSA	ethyl perfluorooctanesulfonamide
EtFOSE	ethyl perfluorooctanesulfonamidoethanol
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MeFOSA	methyl perfluorooctanesulfonamide
MS	matrix spike
MSD	matrix spike duplicate
ng/L	nanograms per liter
NIS	non-extracted internal standard
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFPeA	perfluoropentanoic acid
PFTeDA	perfluorotetradecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America, Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 62 aqueous samples, including 6 equipment blanks and 3 field duplicates, between 5 and 18 October 2023 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to Bureau Veritas Canada (Bureau Veritas), located in Mississauga, Ontario, Canada, where they were received between 12 and 20 October 2023 and assigned to job numbers C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572. Bureau Veritas analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633. WSP also sent three interlaboratory split samples to SGS North America, Inc. (SGS), located in Orlando, Florida, where they were received on 20 October 2023 and assigned to job number FC10610.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 2B validation on 100 percent (%) of primary field samples analyzed by Bureau Veritas in job numbers C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572. Split sample data reported by SGS in job number FC10610 were not validated and the results were used only to assess interlaboratory precision and data comparability. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms but does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;

- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
NJ	The analyte has been tentatively identified as present and the concentration is estimated.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CCL	Low CCV recovery. Result may be biased low.
CFD	Confirmation ion was not present in a reported detection of an analyte with a confirmation ion.
EBL	The analyte was detected in the associated equipment blank and the concentration detected in the sample was less than the limit of quantitation (LOQ).
EISL	Low EIS recovery.
HPHL	Hold time between collection and extraction exceeded.
IAG	Transition ion ratio is outside of expected limits.
LBL	The analyte was detected in the associated laboratory blank and the concentration detected in the sample was less than the LOQ.
SNL	Signal to noise ratio did not meet criteria.
TH8	Elevated sample receipt temperature.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius (°C), with the following exception:

- Bureau Veritas signed the first page of the COC associated with report number C3V6785, but not the second or third pages. WSP did not qualify any data based on the missing signatures.
- Bureau Veritas did not sign the second page of the COC for report number C3W2330, but there is a note in the signature line to "see page 1". Additionally, the sample receipt temperatures recorded on the COC, ranging between 10.2 and 12.8 °C, were all greater than 6 °C. Per the DoD Data Validation Guidelines, WSP J qualified the detected and UJ qualified the non-detected PFAS results from samples LORNG_BW03002_10112023, LORNG_BW18003_10112023, LORNG_BW18007_10112023, LORNG_GC_BW001_10112023, LORNG_JBW7403_10112023, LORNG_JMW3501_10112023, LORNG_JPZ1382_10112023, LORNG_LF2MW3_10112023, LORNG_MMW0020_60_10112023, LORNG_MMW0020_60_10112023FD, LORNG_MMW0020_150_10112023, LORNG_OW01003_10112023, and LORNG_USMW019_10112023 because of the elevated sample receipt temperatures. (J/UJ, TH8)
- Bureau Veritas did not sign the second page of the COC for report number C3W7572, but there is a note on the signature line to "see page 1". Additionally, the sample receipt temperatures for the samples were generally high, with the average temperature for one of the coolers acceptable at 6.4 °C, but temperatures for the remaining coolers were high with average temperature readings between 7.4 and 8.4 °C. It is not possible to determine which samples were in each cooler and per the DoD Data Validation guidelines, WSP J qualified the detected and UJ qualified the non-detected PFAS results from samples LORNG_BW10006_10182023, LORNG_BW10006_10182023FD, LORNG_BW10007_10182023 , LORNG_BW13002_10182023, LORNG_BW17006_10182023, LORNG_BW18006_10182023, LORNG_JBW7316_10182023, LORNG_JBW7326A_10182023, LORNG_JBW7326B_10182023, LORNG_JBW7345B_10182023, LORNG_JMW-0241A_10182023, LORNG_JMW0445_10182023, LORNG_JMW0961_10182023, LORNG_MMW0007B_10182023, LORNG_OW22003_10182023, LORNG_SB/OW16001_10182023, and LORNG_SB/OW16001_10182023FD because of the elevated sample receipt temperatures. (J/UJ, TH8)

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 9.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.15.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction, with the following exception:

- According to the laboratory's notes, sample LORNG_MMW0124_10102023 was originally extracted within the method-specified maximum hold time and then re-extracted 38 days outside the method-specified hold time using a greater extraction volume. Based on professional judgement, WSP J qualified the detected and UJ qualified the non-detected PFAS results from sample LORNG_MMW0124_10102023 because of the grossly exceeded hold time. (J/UJ, HPHL)

7.1.2 MASS CALIBRATION FREQUENCY

According to the laboratory's notes, the analytical instrument underwent mass calibration to the instrument's manufacturer's specifications and using the manufacturer's recommended standard less than a year before the samples reviewed in this report were analyzed.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exception:

- 3-Perfluoropropyl propanoic acid (3:3 FTCA) recovery was low at 66% in the ISC associated with the analysis of samples LORNG_BW10006_10182023 and LORNG_JBW7316_10182023. Based on professional judgement, WSP UJ qualified the non-detected 3:3 FTCA results from the associated samples because of the low ISC recovery. (UJ, CCL)

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS), with the following exception:

- Bureau Veritas analyzed a bile salt standard with samples LORNG_BW10006_10182023 and LORNG_JBW7316_10182023, but the bile salt peak was not visible, and it was not possible to determine whether bile salts elute more than a minute before linear or branched PFOS. PFOS was detected in the

associated samples and ion ratios were within method specified limits. Per the DoD data validation guidelines, WSP did not qualify any data based on it not being possible to confirm potential bile salt interference.

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory and equipment blanks associated with the samples reviewed in this report, with the following exceptions:

- Perfluorooctanesulfonamide (PFOSA) was detected at a concentration of 0.23 nanograms per liter (ng/L) in the laboratory blank associated with the extraction of samples LORNG_BW10006_10182023 and LORNG_JBW7316_10182023. WSP U qualified the PFOSA results from the associated samples because the concentrations detected in the samples were greater than the LOD but less than the LOQ. (U, LBL)
- Perfluorooctanoic acid (PFOA) was detected at a concentration of 0.15 ng/L in the laboratory blank associated with the extraction of samples LORNG_BW10007_10182023, LORNG_BW13002_10182023, LORNG_BW17006_10182023, LORNG_BW18006_10182023, LORNG_JBW7326A_10182023, LORNG_JBW7326B_10182023, LORNG_JBW7345B_10182023, LORNG_JMW-0241A_10182023, LORNG_JMW0445_10182023, LORNG_JMW0961_10182023, LORNG_MMW0007B_10182023, LORNG_OW22003_10182023, LORNG_SB/OW16001_10182023, and LORNG_SB/OW16001_10182023FD. Data limitations are summarized below.
    - WSP U qualified the PFOA result from sample LORNG_BW10007_10182023 at the LOD of 0.25 ng/L because the concentration detected in the sample, at 0.14 ng/L, was less than the LOD. (U, LBL)
    - WSP U qualified the PFOA result from samples LORNG_BW13002_10182023, LORNG_BW17006_10182023, and LORNG_JMW-0241A_10182023 because the concentrations detected in the samples were less than the LOQ. (U, LBL)
    - PFOA concentrations detected in the remaining associated samples were greater than both the LOQ and five times the concentration detected in the blank, and data usability is not adversely affected by the blank detection.
- PFOSA was detected at a concentration of 0.23 ng/L in equipment blank LORNG_EB009_10182023, associated with samples LORNG_BW13002_10182023, LORNG_BW17006_10182023, and LORNG_JMW-0241A_10182023. Data limitations are summarized below.
    - WSP U qualified the PFOSA results from samples LORNG_BW13002_10182023 and LORNG_BW17006_10182023 at the detected concentrations because the concentrations detected in the samples were greater than the LOD but less than the LOQ. (U, EBL)
    - PFOSA was not detected in sample LORNG_JMW-0241A_10182023 and data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 0.23 ng/L in equipment blank LORNG_EB004_10112023, associated with samples LORNG_BW18007_10112023 and LORNG_JBW7403_10112023. The PFOS concentration detected in sample LORNG_BW18007_10112023 was greater than the LOQ and greater than five times the concentration detected in the blank and PFOS was not detected in sample LORNG_JBW7403_10112023. Data usability is not adversely affected by the blank detection.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

Low level LCS (LLCS) and LCS were included with each extraction batch, (LLCS) spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

Bureau Veritas performed MS and MSD analyses on samples LORNG_MMW0124_10102023 and LORNG_MMW0326_10102023. MS and MSD recoveries were within the QAPP-specified LCS limits and RPDs between MS and MSD results were less than 30%.

7.1.11 DUPLICATE PRECISION

Bureau Veritas did not perform duplicate analyses on the samples reviewed in this report.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries were within the QAPP-specified 20 to 150% interim limits, with the following exceptions:

- Recoveries of the EISs D_3-methyl perfluorooctanesulfonamide (MeFOSA) and D_5-ethylperfluorooctanesulfonamide (EtFOSA) were low at 14% and 12%, respectively, in sample LORNG_BW10007_10182023. WSP UJ qualified the non-detected MeFOSA and EtFOSA results from this sample because of the low EIS recoveries. (UJ, EISL)
- Recovery of the EIS D_5-EtFOSA was low at 15% in sample LORNG_MMW0020_60_10112023FD. WSP UJ qualified the non-detected EtFOSA result from this sample because of the low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-perfluorotetradecanoic acid (PFTeDA [13%]), D_3-MeFOSA (9.8%), D_5-EtFOSA (5.0%), and D_9-ethyl perfluorooctanesulfonamidoethanol (EtFOSE [14%]) were low in sample LORNG_USMW019_10112023. Data limitations are summarized below.
  - Based on professional judgement, WSP R qualified and rejected the non-detected EtFOSA result from sample LORNG_USMW019_10112023 because of the extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detected perfluorotridecanoic acid, PFTeDA, MeFOSA, and EtFOSE results from sample LORNG_USMW019_10112023 because of the low EIS recoveries. (UJ, EISL)

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exception:

- Recovery of the NIS $^{13}C_3$-perfluorobutanoic acid was high at 156% in sample LORNG_BW10006_10182023. The DoD Data Validation Guidelines do not specify any action for high NIS recoveries and WSP did not qualify any data based on the high NIS recovery.

7.1.14 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

WSP J qualified the following results because the ion ratios were outside of expected limits according to bureau Veritas' notes. (J, IAG)

- Perfluoropentanoic acid (PFPeA) in samples LORNG_BW02002_10102023, LORNG_BW03002_10112023, LORNG_BW18007_10112023, LORNG_JBW7316_10182023, LORNG_JMW-0241A_10182023, and LORNG_JMW7916_10102023;
- PFPeA and perfluoroheptanesulfonic acid in sample LORNG_OW22003_10182023,

- Perfluorohexanoic acid in samples LORNG_BW16001_10092023, LORNG_BW18003_10112023, and LORNG_USMW019_10112023;
- PFOA in samples LORNG_JMW0941_10102023, LORNG_USMW004_10062023, and LORNG_USMW015_10052023;
- Perfluoropentanesulfonic acid in sample LORNG_JBW7314_10122023;
- PFOS in sample LORNG_NP_OW001_10102023; and
- PFOSA in samples LORNG_BW10007_10182023, LORNG_BW18006_10182023, LORNG_JBW7326A_10182023, LORNG_JBW7326B_10182023, LORNG_MMW0007B_10182023, and LORNG_SB/OW16001_10182023FD.

According to Bureau Veritas' notes, ion ratios for PFPeA were outside of limits in samples LORNG_BW10006_10182023 and LORNG_JBW7314_10122023 because the confirmation ions were not detected. Based on professional judgement, WSP NJ qualified the detected PFPeA results from these samples as being presumptively identified with estimated concentrations because of the missing confirmation ions. (NJ, CFD)

According to Bureau Veritas' notes, ion ratios for PFOSA were outside of limits in samples LORNG_BW13002_10182023, LORNG_BW17006_10182023, and LORNG_OW22003_10182023 because the confirmation ions were not detected. Data limitations are summarized below.

- Based on professional judgement, WSP NJ qualified the detected PFOSA result as being presumptively identified with an estimated concentration from sample LORNG_OW22003_10182023 because of the missing confirmation ion. (NJ, CFD)
- PFOSA was previously U qualified in samples LORNG_BW13002_10182023 and LORNG_BW17006_10182023 due to a detection in the associated equipment blank and WSP did not additionally qualify the data based on the missing confirmation ion.

According to Bureau Veritas' notes, the signal to noise ratio for the PFPeA detection in sample LORNG_BW02002_10102023 did not meet method-specified minimum criteria. Per the DoD data validation guidelines, WSP J qualified this result because of the low signal to noise ratio. (J, SNL)

Bureau Veritas J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Eurofins' J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_BW10006_10182023, LORNG_MMW0020_60_10112023, and LORNG_SB/OW16001_10182023. Precision between primary and field duplicate results was acceptable, with RPDs less than 30% or differences between concentrations less than the average LOQ. Detections in the field duplicate pairs are summarized in Table 4.

9 INTERLABORATORY SPLIT PRECISION

WSP collected interlaboratory splits with samples LORNG_BW10007_10182023, LORNG_JBW7326A_10182023, and LORNG_JBW7345B_10182023. SGS' sensitivity limits were roughly twice Bureau Veritas' sensitivity limits, resulting in more target analyte detections in Bureau Veritas' dataset. Precision between primary and split results was generally acceptable, with RPDs less than 30% or differences between concentrations less than the average LOQ, with the following exception:

- Bureau Veritas detected PFOS at a concentration of 29 ng/L in sample LORNG_JBW7326A_10182023 and SGS detected a concentration of 20.1 ng/L. The difference between the detected concentrations is greater than the average LOQ of 2.6 ng/L and the RPD between the results was high at 36%. Interlaboratory split data are

being used to demonstrate overall comparability and per the project team, no data were qualified based on the imprecision between the split results.

Detections in the interlaboratory split pairs are summarized in Table 5.

10 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 2,160 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 1 record (0.05%) because of an extremely low EIS recovery.
- J: WSP J qualified 354 records (16%) due to a hold time exceedance, elevated sample receipt temperatures, detected concentrations less than the LOQ, transition ion ratios outside of expected limits, and a signal to noise ratio outside of limits.
- NJ: WSP NJ qualified 3 records (0.14%) as being tentatively identified with estimated concentrations because the confirmation ions were not present.
- UJ: WSP UJ qualified 970 records (45%) due to elevated sample receipt temperatures, a hold time exceedance, low CCV recovery, detections in the associated equipment or laboratory blanks, and/or low EIS recoveries.

Data qualified during validation are summarized in Table 3.

11 REFERENCES

WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

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EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLES

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3V6692	BW05008	LORNG_BW05008_10062023	XGO568	10/6/2023	WG	N	40
	MMW0124	LORNG_MMW0124_10102023	XGO569	10/10/2023	WG	N	40
C3V6785	044-RW01	LORNG_044-RW01_10102023	XGP487	10/10/2023	WG	N	40
	BB_BW002	LORNG_BB_BW002_10062023	XGP478	10/6/2023	WG	N	40
	BB_OW002	LORNG_BB_OW002_10062023	XGP479	10/6/2023	WG	N	40
	BW02001	LORNG_BW02001_10102023	XGP488	10/10/2023	WG	N	40
	BW02002	LORNG_BW02002_10102023	XGP489	10/10/2023	WG	N	40
	BW03001	LORNG_BW03001_10102023	XGP490	10/10/2023	WG	N	40
	BW16001	LORNG_BW16001_10092023	XGP480	10/9/2023	WG	N	40
	FIELDQC	LORNG_EB001_10102023	XGP499	10/10/2023	WQ	EB	40
		LORNG_EB002_10102023	XGP500	10/10/2023	WQ	EB	40
	GC_BW002S	LORNG_GC_BW002S_10102023	XGP491	10/10/2023	WG	N	40
	JMW-0603	LORNG_JMW-0603_10092023	XGP481	10/9/2023	WG	N	40
	JMW0941	LORNG_JMW0941_10102023	XGP492	10/10/2023	WG	N	40
	JMW7913	LORNG_JMW7913_10092023	XGP482	10/9/2023	WG	N	40
	JMW7916	LORNG_JMW7916_10102023	XGP493	10/10/2023	WG	N	40
	MMW0006	LORNG_MMW0006_10092023	XGP483	10/9/2023	WG	N	40
	MMW0326	LORNG_MMW0326_10102023	XGP494	10/10/2023	WG	N	40
	NP_BW001D	LORNG_NP_BW001D_10102023	XGP495	10/10/2023	WG	N	40
	NP_BW001S	LORNG_NP_BW001S_10102023	XGP496	10/10/2023	WG	N	40
	NP_OW001	LORNG_NP_OW001_10102023	XGP497	10/10/2023	WG	N	40
	OW20001	LORNG_OW20001_10062023	XGP484	10/6/2023	WG	N	40
	UNK-23001	LORNG_UNK-23001_10092023	XGP498	10/9/2023	WG	N	40
	USMW004	LORNG_USMW004_10062023	XGP485	10/6/2023	WG	N	40
	USMW015	LORNG_USMW015_10052023	XGP486	10/5/2023	WG	N	40
C3W2271	BW09001	LORNG_BW09001_10132023	XHT877	10/13/2023	WG	N	40
	JBW7314	LORNG_JBW7314_10122023	XHT875	10/12/2023	WG	N	40
	JBW7752	LORNG_JBW7752_10122023	XHT876	10/12/2023	WG	N	40
C3W2330	BW03002	LORNG_BW03002_10112023	XHU352	10/11/2023	WG	N	40
	BW18003	LORNG_BW18003_10112023	XHU340	10/11/2023	WG	N	40
	BW18007	LORNG_BW18007_10112023	XHU341	10/11/2023	WG	N	40
	FIELDQC	LORNG_EB003_10112023	XHU342	10/11/2023	WQ	EB	40
		LORNG_EB004_10112023	XHU343	10/11/2023	WQ	EB	40
		LORNG_EB005_10112023	XHU353	10/11/2023	WQ	EB	40
	GC_BW001	LORNG_GC_BW001_10112023	XHU344	10/11/2023	WG	N	40
	JBW7403	LORNG_JBW7403_10112023	XHU345	10/11/2023	WG	N	40
	JMW3501	LORNG_JMW3501_10112023	XHU354	10/11/2023	WG	N	40
	JPZ1382	LORNG_JPZ1382_10112023	XHU346	10/11/2023	WG	N	40
	LF2MW3	LORNG_LF2MW3_10112023	XHU347	10/11/2023	WG	N	40
	MMW0020	LORNG_MMW0020_150_10112023	XHU348	10/11/2023	WG	N	40
		LORNG_MMW0020_60_10112023	XHU349	10/11/2023	WG	N	40
		LORNG_MMW0020_60_10112023FD	XHU350	10/11/2023	WG	FD	40
	OW01003	LORNG_OW01003_10112023	XHU355	10/11/2023	WG	N	40
	USMW019	LORNG_USMW019_10112023	XHU351	10/11/2023	WG	N	40

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3W7572	BW10006	LORNG_BW10006_10182023	XIV980	10/18/2023	WG	N	40
		LORNG_BW10006_10182023FD	XIV989	10/18/2023	WG	FD	40
	BW10007	LORNG_BW10007_10182023	XIV990	10/18/2023	WG	N	40
	BW13002	LORNG_BW13002_10182023	XIV991	10/18/2023	WG	N	40
	BW17006	LORNG_BW17006_10182023	XIV992	10/18/2023	WG	N	40
	BW18006	LORNG_BW18006_10182023	XIV993	10/18/2023	WG	N	40
	FIELDQC	LORNG_EB009_10182023	XIV997	10/18/2023	WQ	EB	40
	JBW7316	LORNG_JBW7316_10182023	XIV981	10/18/2023	WG	N	40
	JBW7326A	LORNG_JBW7326A_10182023	XIV982	10/18/2023	WG	N	40
	JBW7326B	LORNG_JBW7326B_10182023	XIV983	10/18/2023	WG	N	40
	JBW7345B	LORNG_JBW7345B_10182023	XIV984	10/18/2023	WG	N	40
	JMW-0241A	LORNG_JMW-0241A_10182023	XIV985	10/18/2023	WG	N	40
	JMW0445	LORNG_JMW0445_10182023	XIV986	10/18/2023	WG	N	40
	JMW0961	LORNG_JMW0961_10182023	XIV987	10/18/2023	WG	N	40
	MMW0007B	LORNG_MMW0007B_10182023	XIV994	10/18/2023	WG	N	40
	OW22003	LORNG_OW22003_10182023	XIV988	10/18/2023	WG	N	40
	SB/OW16001	LORNG_SB/OW16001_10182023	XIV995	10/18/2023	WG	N	40
		LORNG_SB/OW16001_10182023FD	XIV996	10/18/2023	WG	FD	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

				SDG	C3V6692		C3V6785										
				Location	BW05008	MMW0124	044-RW01	BB_BW002	BB_OW002	BW02001	BW02002	BW03001	BW16001	FIELDQC		GC_BW002S	JMW-0603
				Sample Date	10/6/2023	10/10/2023	10/10/2023	10/6/2023	10/6/2023	10/10/2023	10/10/2023	10/10/2023	10/9/2023	10/10/2023		10/10/2023	10/9/2023
				Sample ID	LORNG_BW05008_10062023	LORNG_MMW0124_10102023	LORNG_044-RW01_10102023	LORNG_BB_BW002_10062023	LORNG_BB_OW002_10062023	LORNG_BW02001_10102023	LORNG_BW02002_10102023	LORNG_BW03001_10102023	LORNG_BW16001_10092023	LORNG_EB001_10102023	LORNG_EB002_10102023	LORNG_GC_BW002S_10102023	LORNG_JMW-0603_10092023
				QC Code	N	N	N	N	N	N	N	N	N	EB	EB	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.5 J	3.8 J	2 U	2 U	2 U	2 U	0.64 J	1.9 J	2 U	2 U	2 U	2 U	6 J
		Perfluoropentanoic acid (PFPeA)	NG/L	4.4	5.4 J	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	1.1 J	0.5 U	0.5 U	0.5 U	0.5 U	1.4 J
		Perfluorohexanoic acid (PFHxA)	NG/L	2.2	3.9 J	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J	1.3 J	0.39 J	0.5 U	0.5 U	0.18 J	0.81 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.2 J	3.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.47 J	0.5 U	0.5 U	0.5 U	0.5 U	0.41 J
		Perfluorooctanoic acid (PFOA)	NG/L	0.99 J	6.3 J	0.25 U	0.25 U	0.25 U	0.25 U	0.63 J	1.1 J	0.25 U	0.25 U	0.25 U	0.25 U	2.1
		Perfluorononanoic acid (PFNA)	NG/L	0.2 J	0.62 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.51 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.51 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.66 J	1.1 J	0.44 U	0.44 U	0.44 U	0.44 U	0.17 J	0.24 J	0.44 U	0.44 U	0.44 U	0.44 U	0.77 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.64 J	0.98 J	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.37 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.3	11 J	0.47 U	0.47 U	1.6	0.47 U	1.3 J	1 J	0.47 U	0.47 U	0.47 U	0.47 U	4.8
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.48 UJ	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.8	12 J	0.47 U	0.47 U	0.47 U	0.47 U	1 J	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	1.9
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.96 UJ	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.48 UJ	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 UJ	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 UJ	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.3 J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.9 UJ	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.26 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.6 UJ	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5.1 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4.1 UJ	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.9 UJ	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 UJ	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.51 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	61 UJ	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.7 UJ	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.7 UJ	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.2 UJ	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	9 UJ	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	32 UJ	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	32 UJ	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

				SDG	C3V6692		C3V6785															
				Location	BW05008	MMW0124	044-RW01	BB_BW002	BB_OW002	BW02001	BW02002	BW03001	BW16001	FIELDQC		GC_BW002S	JMW-0603					
				Sample Date	10/6/2023	10/10/2023	10/10/2023	10/6/2023	10/6/2023	10/10/2023	10/10/2023	10/10/2023	10/9/2023	10/10/2023		10/10/2023	10/9/2023					
				Sample ID	LORNG_BW05008_10062023	LORNG_MMW0124_10102023	LORNG_044-RW01_10102023	LORNG_BB_BW002_10062023	LORNG_BB_OW002_10062023	LORNG_BW02001_10102023	LORNG_BW02002_10102023	LORNG_BW03001_10102023	LORNG_BW16001_10092023	LORNG_EB001_10102023		LORNG_GC_BW002S_10102023	LORNG_JMW-0603_10092023					
				QC Code	N	N	N	N	N	N	N	N	N	EB		N	N					
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

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Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

		SDG		C3W2271			C3W2330											
		Location		BW09001	JBW7314	JBW7752	BW03002	BW18003	BW18007	FIELDQC			GC_BW001	JBW7403	JMW3501	JPZ1382	LF2MW3	
		Sample Date		10/13/2023	10/12/2023	10/12/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023			10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023	
		Sample ID		LORNG_BW09001_10132023	LORNG_JBW7314_10122023	LORNG_JBW7752_10122023	LORNG_BW03002_10112023	LORNG_BW18003_10112023	LORNG_BW18007_10112023	LORNG_EB003_10112023	LORNG_EB004_10112023	LORNG_EB005_10112023	LORNG_GC_BW001_10112023	LORNG_JBW7403_10112023	LORNG_JMW3501_10112023	LORNG_JPZ1382_10112023	LORNG_LF2MW3_10112023	LORNG_M 0_60_10
		QC Code		N	N	N	N	N	N	EB	EB	EB	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.5 J	0.91 J	2.2 J	1.7 J	0.68 J	1.8 UJ	1.8 U	1.8 U	2 U	1.8 UJ	1.8 UJ	2.5 J	1.8 UJ	0.73 J	2
		Perfluoropentanoic acid (PFPeA)	NG/L	7.3	0.61 NJ	3 J	1.8 J	0.2 J	0.41 J	0.45 U	0.45 U	0.5 U	0.45 UJ	0.45 UJ	0.89 J	0.45 UJ	0.31 J	0.5
		Perfluorohexanoic acid (PFHxA)	NG/L	7.1	0.45 J	2.3	2.5 J	0.15 J	0.45 J	0.45 U	0.45 U	0.5 U	0.23 J	0.45 UJ	0.72 J	0.18 J	0.48 J	0.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.6 J	0.4 J	1.4 J	0.96 J	0.16 J	0.38 J	0.45 U	0.45 U	0.5 U	0.15 J	0.45 UJ	0.54 J	0.45 UJ	0.27 J	0.5
		Perfluorooctanoic acid (PFOA)	NG/L	3.9	1.4 J	1.5 J	2.1 J	0.15 J	0.74 J	0.23 U	0.23 U	0.25 U	0.23 UJ	0.23 UJ	0.92 J	0.53 J	0.71 J	0.13
		Perfluorononanoic acid (PFNA)	NG/L	0.5 U	0.5 U	0.5 U	0.16 J	0.45 UJ	0.45 UJ	0.45 U	0.45 U	0.5 U	0.45 UJ	0.45 UJ	0.19 J	0.45 UJ	0.21 J	0.5
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 UJ	0.45 UJ	0.45 UJ	0.45 U	0.45 U	0.5 U	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.5
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 UJ	0.45 UJ	0.45 UJ	0.45 U	0.45 U	0.5 U	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.5
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.62 J	0.28 J	0.79 J	0.38 J	0.42 J	0.4 UJ	0.4 U	0.4 U	0.44 U	0.4 UJ	0.4 UJ	0.42 J	0.28 J	0.25 J	0.16
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.49 J	0.19 J	0.56 J	0.27 J	0.17 J	0.42 UJ	0.42 U	0.42 U	0.47 U	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.47
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	8.8	2.5	5.5	7.3 J	2.4 J	2.6 J	0.42 U	0.42 U	0.47 U	0.42 UJ	0.42 UJ	3.6 J	1.9 J	3.8 J	1.3
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 UJ	0.42 UJ	0.42 UJ	0.42 U	0.42 U	0.47 U	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.47
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.96 J	5.2	4.3	0.47 UJ	0.87 J	2.2 J	0.42 U	0.23 J	0.47 U	0.42 UJ	0.42 UJ	1.1 J	1.1 J	3.2 J	0.47
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 UJ	0.85 UJ	0.85 UJ	0.85 U	0.85 U	0.94 U	0.85 UJ	0.85 UJ	0.85 UJ	0.85 UJ	0.85 UJ	0.94
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 UJ	0.42 UJ	0.42 UJ	0.42 U	0.42 U	0.47 U	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.42 UJ	0.47
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 UJ	1.7 UJ	1.7 UJ	1.7 U	1.7 U	1.9 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.9
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 UJ	1.7 UJ	1.7 UJ	1.7 U	1.7 U	1.9 U	8.1 J	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.9
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 UJ	3.4 UJ	3.4 UJ	3.4 U	3.4 U	3.8 U	3.4 UJ	3.4 UJ	3.4 UJ	3.4 UJ	3.4 UJ	3.8
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.25 U	0.25 UJ	0.23 UJ	0.23 UJ	0.23 U	0.23 U	0.25 U	0.23 UJ	0.23 UJ	0.23 UJ	0.23 UJ	0.23 UJ	0.25
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 UJ	0.9 UJ	0.9 UJ	0.9 U	0.9 U	1 U	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 UJ	2.3 UJ	2.3 UJ	2.3 U	2.3 U	2.5 U	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.5
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 UJ	4.5 UJ	4.5 UJ	4.5 U	4.5 U	5 U	4.5 UJ	4.5 UJ	4.5 UJ	4.5 UJ	4.5 UJ	5
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 UJ	3.6 UJ	3.6 UJ	3.6 U	3.6 U	4 U	3.6 UJ	3.6 UJ	3.6 UJ	3.6 UJ	3.6 UJ	4
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 UJ	3.4 UJ	3.4 UJ	3.4 U	3.4 U	3.8 U	3.4 UJ	3.4 UJ	3.4 UJ	3.4 UJ	3.4 UJ	3.8
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 UJ	1.8 UJ	1.8 UJ	1.8 U	1.8 U	2 U	1.8 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.8 UJ	2
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 UJ	0.45 UJ	0.45 UJ	0.45 U	0.45 U	0.5 U	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.45 UJ	0.5
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 UJ	54 UJ	54 UJ	54 U	54 U	60 U	54 UJ	54 UJ	54 UJ	54 UJ	54 UJ	60
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 UJ	5.9 UJ	5.9 UJ	5.9 U	5.9 U	6.6 U	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ	6.6
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 UJ	5.9 UJ	5.9 UJ	5.9 U	5.9 U	6.6 U	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ	6.6
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 UJ	2.8 UJ	2.8 UJ	2.8 U	2.8 U	3.1 U	2.8 UJ	2.8 UJ	2.8 UJ	2.8 UJ	2.8 UJ	3.1
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 UJ	7.9 UJ	7.9 UJ	7.9 U	7.9 U	8.8 U	7.9 UJ	7.9 UJ	7.9 UJ	7.9 UJ	7.9 UJ	8.8
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 UJ	28 UJ	28 UJ	28 U	28 U	31 U	28 UJ	28 UJ	28 UJ	28 UJ	28 UJ	31
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 UJ	28 UJ	28 UJ	28 U	28 U	31 U	28 UJ	28 UJ	28 UJ	28 UJ	28 UJ	31

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

		SDG		C3W2330					C3W7572									
		Location		MMW0020		OW01003	USMW019		BW10006		BW10007	BW13002	BW17006	BW18006	FIELDQC	JBW7316	JBW7326A	JBW7326B
		Sample Date		10/11/2023		10/11/2023	10/11/2023		10/18/2023		10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023
		Sample ID	MW002 12023	LORNG_MMW002 0_60_10112023FD	LORNG_MMW002 0_150_10112023	LORNG_OW01003 _10112023	LORNG_USMW01 9_10112023	LORNG_BW10006 _10182023	LORNG_BW10006 _10182023FD	LORNG_BW10007 _10182023	LORNG_BW13002 _10182023	LORNG_BW17006 _10182023	LORNG_BW18006 _10182023	LORNG_EB009_10 182023	LORNG_JBW7316 _10182023	LORNG_JBW7326 A_10182023	LORNG_JBW7326 B_10182023
		QC Code		FD	N	N	N	N	FD	N	N	N	N	EB	N	N	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	UJ	2 UJ	2 UJ	0.9 J	1.8 UJ	5.6 J	4.5 J	2 UJ	2.5 J	3.6 J	3.5 J	2 U	3.5 J	5.2 J	4.2 J
		Perfluoropentanoic acid (PFPeA)	NG/L	UJ	0.5 UJ	0.5 UJ	1.3 J	0.45 UJ	8.5 NJ	7.8 J	0.5 UJ	4 J	9.2 J	5.4 J	0.5 U	4.7 J	9.8 J	6.6 J
		Perfluorohexanoic acid (PFHxA)	NG/L	UJ	0.5 UJ	0.16 J	1.4 J	0.19 J	11 J	11 J	0.13 J	2.8 J	6.2 J	3 J	0.5 U	3.6 J	7.5 J	5.2 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	UJ	0.5 UJ	0.5 UJ	0.47 J	0.45 UJ	4.3 J	3.7 J	0.5 UJ	2.2 J	2 J	2.1 J	0.5 U	1.7 J	4.5 J	3.2 J
		Perfluorooctanoic acid (PFOA)	NG/L	J	0.25 UJ	0.31 J	1.1 J	0.47 J	10 J	9.8 J	0.25 UJ	0.91 UJ	1.2 UJ	2.4 J	0.25 U	2.5 J	5.6 J	5 J
		Perfluorononanoic acid (PFNA)	NG/L	UJ	0.5 UJ	0.5 UJ	0.45 UJ	0.45 UJ	0.32 J	0.33 J	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.16 J	0.51 J	0.38 J
		Perfluorodecanoic acid (PFDA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	UJ	0.5 UJ	0.5 UJ	0.45 UJ	0.45 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	UJ	0.5 UJ	0.5 UJ	0.45 UJ	0.45 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
		Perfluorobutanesulfonic acid (PFBS)	NG/L	J	0.44 UJ	0.16 J	0.55 J	0.28 J	2.3 J	2 J	0.38 J	0.24 J	0.25 J	0.76 J	0.44 U	1 J	2 J	2.1 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	UJ	0.47 UJ	0.47 UJ	0.36 J	0.42 UJ	3.4 J	2.4 J	0.47 UJ	0.47 UJ	0.47 UJ	0.5 J	0.47 U	1 J	2.6 J	2.3 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	J	1.2 J	1.5 J	4.1 J	0.79 J	42 J	36 J	1.6 J	1.6 J	2.1 J	6.1 J	0.47 U	11 J	30 J	29 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	UJ	0.47 UJ	0.47 UJ	0.42 UJ	0.42 UJ	0.76 J	0.43 J	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 U	0.47 UJ	0.43 J	0.43 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	UJ	0.47 UJ	0.47 UJ	1.1 J	2.7 J	38 J	35 J	0.89 J	1.1 J	1.3 J	2.8 J	0.47 U	6.1 J	29 J	29 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	UJ	0.94 UJ	0.94 UJ	0.85 UJ	0.85 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 U	0.94 UJ	0.94 UJ	0.94 UJ
		Perfluorodecanesulfonic acid (PFDS)	NG/L	UJ	0.47 UJ	0.47 UJ	0.42 UJ	0.42 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 U	0.47 UJ	0.47 UJ	0.47 UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	UJ	1.9 UJ	1.9 UJ	1.7 UJ	1.7 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 U	1.9 UJ	1.9 UJ	1.9 UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	UJ	1.9 UJ	1.9 UJ	1.7 UJ	1.7 UJ	1.9 UJ	1.9 UJ	1.9 UJ	4 J	1.4 J	1.9 UJ	1.9 U	1.9 UJ	2.3 J	1.9 UJ
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	UJ	3.8 UJ	3.8 UJ	3.4 UJ	3.4 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 U	3.8 UJ	3.8 UJ	3.8 UJ
		Perfluorooctane sulfonamide (PFOSA)	NG/L	UJ	0.25 UJ	0.25 UJ	0.23 UJ	0.23 UJ	0.7 UJ	0.27 J	0.28 J	0.33 UJ	0.34 UJ	0.22 J	0.23 J	0.57 UJ	0.18 J	0.3 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 R	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	UJ	1 UJ	1 UJ	0.9 UJ	0.9 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	UJ	2.5 UJ	2.5 UJ	2.3 UJ	2.3 UJ	2.5 UJ	4.4 J	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ	2.5 U	6.6 J	1.2 J	2.5 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	UJ	5 UJ	5 UJ	4.5 UJ	4.5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 UJ	5 UJ	5 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	UJ	4 UJ	4 UJ	3.6 UJ	3.6 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 U	4 UJ	4 UJ	4 UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	UJ	3.8 UJ	3.8 UJ	3.4 UJ	3.4 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 U	3.8 UJ	3.8 UJ	3.8 UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	UJ	2 UJ	2 UJ	1.8 UJ	1.8 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 UJ	2 UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	UJ	0.5 UJ	0.5 UJ	0.45 UJ	0.45 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	UJ	60 UJ	60 UJ	54 UJ	54 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 U	60 UJ	60 UJ	60 UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	UJ	6.6 UJ	6.6 UJ	5.9 UJ	5.9 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 U	6.6 UJ	6.6 UJ	6.6 UJ
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	UJ	6.6 UJ	6.6 UJ	5.9 UJ	5.9 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 U	6.6 UJ	6.6 UJ	6.6 UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	UJ	3.1 UJ	3.1 UJ	2.8 UJ	2.8 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 U	3.1 UJ	3.1 UJ	3.1 UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	UJ	8.8 UJ	8.8 UJ	7.9 UJ	7.9 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 U	8.8 UJ	8.8 UJ	8.8 UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	UJ	31 UJ	31 UJ	28 UJ	28 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 U	31 UJ	31 UJ	31 UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	UJ	31 UJ	31 UJ	28 UJ	28 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 U	31 UJ	31 UJ	31 UJ

Notes:

N = Normal Field Sample

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

				SDG	C3W7572							
				Location	JBW7345B	JMW-0241A	JMW0445	JMW0961	MMW0007B	OW22003	SB/OW16001	
				Sample Date	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	10/18/2023	
				Sample ID	LORNG_JBW7345B_10182023	LORNG_JMW-0241A_10182023	LORNG_JMW0445_10182023	LORNG_JMW0961_10182023	LORNG_MMW0007B_10182023	LORNG_OW22003_10182023	LORNG_SB/OW16001_10182023	LORNG_SB/OW16001_10182023FD
				QC Code	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.4 J	0.82 J	7 J	1.4 J	3.5 J	1.3 J	5.7 J	5.5 J
		Perfluoropentanoic acid (PFPeA)	NG/L	5.5 J	0.44 J	4.6 J	1 J	7.8 J	1.6 J	5.5 J	5.4 J
		Perfluorohexanoic acid (PFHxA)	NG/L	6 J	0.41 J	4.4 J	2.3 J	7.3 J	1.6 J	11 J	9.7 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.1 J	0.3 J	2.8 J	0.88 J	4.1 J	1 J	3.5 J	3.4 J
		Perfluorooctanoic acid (PFOA)	NG/L	4.9 J	0.43 UJ	6.6 J	4.7 J	5.4 J	2 J	7.6 J	7.3 J
		Perfluorononanoic acid (PFNA)	NG/L	0.4 J	0.5 UJ	1.6 J	0.36 J	0.39 J	0.46 J	1.8 J	1.8 J
		Perfluorodecanoic acid (PFDA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
		Perfluorododecanoic acid (PFDoA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 J	0.44 UJ	1.6 J	0.42 J	1.6 J	0.71 J	0.78 J	0.89 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9 J	0.47 UJ	1.3 J	0.26 J	1.6 J	0.44 J	0.52 J	0.52 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	25 J	0.79 J	21 J	5.2 J	18 J	16 J	15 J	14 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.4 J	0.47 UJ	0.42 J	0.27 J	0.32 J	0.35 J	0.22 J	0.47 UJ
		Perfluorooctanesulfonic acid (PFOS)	NG/L	23 J	1.3 J	19 J	18 J	19 J	18 J	16 J	17 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 UJ	1.9 UJ	1.6 J	1.9 UJ	1.9 UJ	1.9 UJ	2 J	2.2 J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.24 J	0.25 UJ	0.24 J	1.1 J	0.86 J	0.32 NJ	1.4 J	0.4 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 UJ	1 UJ	1 UJ	2.2 J	1 UJ	1 UJ	1 UJ	1 UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ	2.9 J	1.3 J
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ	31 UJ

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

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Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330 and C3W7572

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6692	E1633DR	T	XGO568	LORNG_BW05008_10062023	Perfluorobutanoic acid (PFBA)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.99	J	0.99	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.2	J	0.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.66	J	0.66	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.64	J	0.64	J	TR	NG/L
			XGO569	LORNG_MMW0124_10102023	Perfluorobutanoic acid (PFBA)	3.8	J	3.8	J	HPHL, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.4		5.4	J	HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	3.9		3.9	J	HPHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.2		3.2	J	HPHL	NG/L
					Perfluorooctanoic acid (PFOA)	6.3		6.3	J	HPHL	NG/L
					Perfluorononanoic acid (PFNA)	0.62	J	0.62	J	HPHL, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.51	U	0.51	UJ	HPHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	HPHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	HPHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.51	U	0.51	UJ	HPHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	HPHL, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.98	J	0.98	J	HPHL, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	11		11	J	HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.48	U	0.48	UJ	HPHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	12		12	J	HPHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.96	U	0.96	UJ	HPHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.48	U	0.48	UJ	HPHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	HPHL	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6692	E1633DR	T	XGO569	LORNG_MMW0124_10102023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.26	U	0.26	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.6	U	2.6	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5.1	U	5.1	UJ	HPHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.1	U	4.1	UJ	HPHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.51	U	0.51	UJ	HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	61	U	61	UJ	HPHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.7	U	6.7	UJ	HPHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.7	U	6.7	UJ	HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.2	U	3.2	UJ	HPHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9	U	9	UJ	HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	32	U	32	UJ	HPHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	32	U	32	UJ	HPHL	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6785	E1633DR	T	XGP489	LORNG_BW02002_10102023	Perfluorobutanoic acid (PFBA)	0.64	J	0.64	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.23	J	0.23	J	IAG, SNL, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.29	J	0.29	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.15	J	0.15	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.63	J	0.63	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.17	J	0.17	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1	J	1	J	TR	NG/L
			XGP490	LORNG_BW03001_10102023	Perfluorobutanoic acid (PFBA)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.47	J	0.47	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.24	J	0.24	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1	J	1	J	TR	NG/L
			XGP480	LORNG_BW16001_10092023	Perfluorohexanoic acid (PFHxA)	0.39	J	0.39	J	IAG, TR	NG/L
			XGP491	LORNG_GC_BW002S_10102023	Perfluorohexanoic acid (PFHxA)	0.18	J	0.18	J	TR	NG/L
			XGP481	LORNG_JMW-0603_10092023	Perfluorobutanoic acid (PFBA)	6	J	6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.81	J	0.81	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.41	J	0.41	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.77	J	0.77	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.37	J	0.37	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.3	J	1.3	J	TR	NG/L
			XGP492	LORNG_JMW0941_10102023	Perfluorooctanoic acid (PFOA)	0.19	J	0.19	J	IAG, TR	NG/L

Prepared by:AKN
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6785	E1633DR	T	XGP482	LORNG_JMW7913_10092023	Perfluorobutanoic acid (PFBA)	0.64	J	0.64	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.23	J	0.23	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.91	J	0.91	J	TR	NG/L
			XGP493	LORNG_JMW7916_10102023	Perfluorobutanoic acid (PFBA)	5.8	J	5.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.46	J	0.46	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.48	J	0.48	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.29	J	0.29	J	TR	NG/L
			XGP483	LORNG_MMW0006_10092023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.3	J	2.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.88	J	0.88	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.39	J	0.39	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.99	J	0.99	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.5	J	0.5	J	TR	NG/L
			XGP494	LORNG_MMW0326_10102023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.88	J	0.88	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.26	J	0.26	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.62	J	0.62	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.25	J	0.25	J	TR	NG/L
			XGP495	LORNG_NP_BW001D_10102023	Perfluorohexanoic acid (PFHxA)	0.15	J	0.15	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.97	J	0.97	J	TR	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6785	E1633DR	T	XGP497	LORNG_NP_OW001_10102023	Perfluorohexanesulfonic acid (PFHxS)	0.37	J	0.37	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.68	J	0.68	J	IAG, TR	NG/L
			XGP484	LORNG_OW20001_10062023	Perfluorobutanoic acid (PFBA)	2.7	J	2.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.4	J	0.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.72	J	0.72	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.6	J	0.6	J	TR	NG/L
			XGP498	LORNG_UNK-23001_10092023	Perfluorooctanoic acid (PFOA)	0.19	J	0.19	J	TR	NG/L
			XGP485	LORNG_USMW004_10062023	Perfluorooctanoic acid (PFOA)	0.4	J	0.4	J	IAG, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.83	J	0.83	J	TR	NG/L
			XGP486	LORNG_USMW015_10052023	Perfluorooctanoic acid (PFOA)	0.21	J	0.21	J	IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.3	J	TR	NG/L
C3W2271	E1633DR	T	XHT877	LORNG_BW09001_10132023	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.62	J	0.62	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.49	J	0.49	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.96	J	0.96	J	TR	NG/L
			XHT875	LORNG_JBW7314_10122023	Perfluorobutanoic acid (PFBA)	0.91	J	0.91	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.61	J	0.61	NJ	CFD, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.45	J	0.45	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.4	J	0.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.28	J	0.28	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.19	J	0.19	J	IAG, TR	NG/L

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Loring PFAS RI
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SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2271	E1633DR	T	XHT876	LORNG_JBW7752_10122023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3	J	3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.79	J	0.79	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.56	J	0.56	J	TR	NG/L
C3W2330	E1633DR	T	XHU352	LORNG_BW03002_10112023	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	J	1.8	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.5		2.5	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.96	J	0.96	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.1		2.1	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.38	J	0.38	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.27	J	0.27	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	7.3		7.3	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU352	LORNG_BW03002_10112023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU340	LORNG_BW18003_10112023	Perfluorobutanoic acid (PFBA)	0.68	J	0.68	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.2	J	0.2	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.15	J	0.15	J	TH8, IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.15	J	0.15	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.42	J	0.42	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.17	J	0.17	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.4		2.4	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.87	J	0.87	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU340	LORNG_BW18003_10112023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU341	LORNG_BW18007_10112023	Perfluorobutanoic acid (PFBA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.41	J	0.41	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.45	J	0.45	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.38	J	0.38	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.74	J	0.74	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU341	LORNG_BW18007_10112023	Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.4	U	0.4	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.6		2.6	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.2		2.2	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L

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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU341	LORNG_BW18007_10112023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU344	LORNG_GC_BW001_10112023	Perfluorobutanoic acid (PFBA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.23	J	0.23	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.15	J	0.15	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.23	U	0.23	UJ	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.4	U	0.4	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.42	U	0.42	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU344	LORNG_GC_BW001_10112023	Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	8.1		8.1	J	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU344	LORNG_GC_BW001_10112023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU345	LORNG_JBW7403_10112023	Perfluorobutanoic acid (PFBA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.23	U	0.23	UJ	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.4	U	0.4	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L

Prepared by:AKN
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Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU345	LORNG_JBW7403_10112023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU354	LORNG_JMW3501_10112023	Perfluorobutanoic acid (PFBA)	2.5	J	2.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.89	J	0.89	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.72	J	0.72	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.54	J	0.54	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.92	J	0.92	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.19	J	0.19	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.42	J	0.42	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.6		3.6	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU354	LORNG_JMW3501_10112023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU346	LORNG_JPZ1382_10112023	Perfluorobutanoic acid (PFBA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.18	J	0.18	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.53	J	0.53	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU346	LORNG_JPZ1382_10112023	Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.28	J	0.28	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU346	LORNG_JPZ1382_10112023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU347	LORNG_LF2MW3_10112023	Perfluorobutanoic acid (PFBA)	0.73	J	0.73	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.31	J	0.31	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.48	J	0.48	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.27	J	0.27	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.71	J	0.71	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.21	J	0.21	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.25	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.8		3.8	J	TH8	NG/L

Prepared by:AKN
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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU347	LORNG_LF2MW3_10112023	Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.2		3.2	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L

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Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU347	LORNG_LF2MW3_10112023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU348	LORNG_MMW0020_150_10112023	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.31	J	0.31	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.5		1.5	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

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Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU348	LORNG_MMW0020_150_10112023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU349	LORNG_MMW0020_60_10112023	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.13	J	0.13	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU349	LORNG_MMW0020_60_10112023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XHU350	LORNG_MMW0020_60_10112023FD	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.25	U	0.25	UJ	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L

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Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU350	LORNG_MMW0020_60_10112023FD	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.2	J	TH8, TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8, EISL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU350	LORNG_MMW0020_60_10112023FD	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XHU355	LORNG_OW01003_10112023	Perfluorobutanoic acid (PFBA)	0.9	J	0.9	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.47	J	0.47	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.55	J	0.55	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.36	J	0.36	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	4.1		4.1	J	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU355	LORNG_OW01003_10112023	Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU355	LORNG_OW01003_10112023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XHU351	LORNG_USMW019_10112023	Perfluorobutanoic acid (PFBA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.19	J	0.19	J	TH8, IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.47	J	0.47	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8, EISL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8, EISL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.28	J	0.28	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.79	J	0.79	J	TH8, TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.7		2.7	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2330	E1633DR	T	XHU351	LORNG_USMW019_10112023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8, EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	R	TH8, EISL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8, EISL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV980	LORNG_BW10006_10182023	Perfluorobutanoic acid (PFBA)	5.6	J	5.6	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	8.5		8.5	NJ	TH8, CFD	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.3		4.3	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	10		10	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.32	J	0.32	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3		2.3	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.4		3.4	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	42		42	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.76	J	0.76	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	38		38	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.7	J	0.7	UJ	TH8, LBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

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Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV980	LORNG_BW10006_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8, CCL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV989	LORNG_BW10006_10182023FD	Perfluorobutanoic acid (PFBA)	4.5	J	4.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.8		7.8	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.7		3.7	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	9.8		9.8	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.33	J	0.33	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV989	LORNG_BW10006_10182023FD	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2		2	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.4		2.4	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	36		36	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	J	0.43	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	35		35	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.27	J	0.27	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	4.4	J	4.4	J	TH8, TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L

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Checked by: JAR
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV989	LORNG_BW10006_10182023FD	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV990	LORNG_BW10007_10182023	Perfluorobutanoic acid (PFBA)	2	U	2	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.13	J	0.13	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.25	J	0.25	UJ	TH8, LBL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.38	J	0.38	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.6		1.6	J	TH8	NG/L

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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV990	LORNG_BW10007_10182023	Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.89	J	0.89	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.28	J	0.28	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8, EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8, EISL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
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Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV990	LORNG_BW10007_10182023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV991	LORNG_BW13002_10182023	Perfluorobutanoic acid (PFBA)	2.5	J	2.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4		4	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8		2.8	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.2		2.2	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.91	J	0.91	UJ	TH8, LBL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.24	J	0.24	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.6		1.6	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV991	LORNG_BW13002_10182023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4	J	4	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.33	J	0.33	UJ	TH8, EBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
					Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TH8, TR	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV992	LORNG_BW17006_10182023	Perfluoropentanoic acid (PFPeA)	9.2		9.2	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	6.2		6.2	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	2		2	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	UJ	TH8, LBL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.25	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.1		2.1	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.4	J	1.4	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.34	J	0.34	UJ	TH8, EBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV992	LORNG_BW17006_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV993	LORNG_BW18006_10182023	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.4		5.4	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	3		3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.1		2.1	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	2.4		2.4	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L

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Date:4/16/24
Checked by: JAR
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV993	LORNG_BW18006_10182023	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.76	J	0.76	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.5	J	0.5	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	6.1		6.1	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.8		2.8	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.22	J	0.22	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L

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Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV993	LORNG_BW18006_10182023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV981	LORNG_JBW7316_10182023	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.7		4.7	J	TH8, IAG	NG/L
					Perfluorohexanoic acid (PFHxA)	3.6		3.6	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.7		1.7	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	2.5		2.5	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.16	J	0.16	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1	J	1	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	11		11	J	TH8	NG/L

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Checked by: JAR
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV981	LORNG_JBW7316_10182023	Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	6.1		6.1	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.57	J	0.57	UJ	TH8, LBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	6.6	J	6.6	J	TH8, TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L

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Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV981	LORNG_JBW7316_10182023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8, CCL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV982	LORNG_JBW7326A_10182023	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	9.8		9.8	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	7.5		7.5	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.5		4.5	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	5.6		5.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.51	J	0.51	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2		2	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6		2.6	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	30		30	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	J	0.43	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	29		29	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV982	LORNG_JBW7326A_10182023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.3	J	2.3	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.18	J	0.18	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	1.2	J	1.2	J	TH8, TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
					Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TH8, TR	NG/L

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV983	LORNG_JBW7326B_10182023	Perfluoropentanoic acid (PFPeA)	6.6		6.6	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	5.2		5.2	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.2		3.2	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	5		5	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.38	J	0.38	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1		2.1	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3		2.3	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	29		29	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	J	0.43	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	29		29	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.3	J	0.3	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV983	LORNG_JBW7326B_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV984	LORNG_JBW7345B_10182023	Perfluorobutanoic acid (PFBA)	3.4	J	3.4	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.5		5.5	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	6		6	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.1		4.1	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	4.9		4.9	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.4	J	0.4	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
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Date: 4/16/24

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV984	LORNG_JBW7345B_10182023	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9		1.9	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9		1.9	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	25		25	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.4	J	0.4	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	23		23	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.24	J	0.24	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV984	LORNG_JBW7345B_10182023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV985	LORNG_JMW-0241A_10182023	Perfluorobutanoic acid (PFBA)	0.82	J	0.82	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.44	J	0.44	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.41	J	0.41	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.3	J	0.3	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.43	J	0.43	UJ	TH8, LBL	NG/L
					Perfluorononanoic acid (PFNA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.79	J	0.79	J	TH8, TR	NG/L

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Checked by: JAR
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV985	LORNG_JMW-0241A_10182023	Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.25	U	0.25	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV985	LORNG_JMW-0241A_10182023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV986	LORNG_JMW0445_10182023	Perfluorobutanoic acid (PFBA)	7		7	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6		4.6	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	4.4		4.4	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.8		2.8	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	6.6		6.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1.6		1.6	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6		1.6	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	21		21	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.42	J	0.42	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	19		19	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV986	LORNG_JMW0445_10182023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.6	J	1.6	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.24	J	0.24	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
					Perfluorobutanoic acid (PFBA)	1.4	J	1.4	J	TH8, TR	NG/L

Prepared by:AKN
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV987	LORNG_JMW0961_10182023	Perfluoropentanoic acid (PFPeA)	1	J	1	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.3		2.3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.88	J	0.88	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	4.7		4.7	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.36	J	0.36	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.42	J	0.42	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.26	J	0.26	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	5.2		5.2	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.27	J	0.27	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	18		18	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.1	J	1.1	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
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Table 3
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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV987	LORNG_JMW0961_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.2		2.2	J	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV994	LORNG_MMW0007B_10182023	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.8		7.8	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	7.3		7.3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.1		4.1	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	5.4		5.4	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.39	J	0.39	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV994	LORNG_MMW0007B_10182023	Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6		1.6	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6		1.6	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	18		18	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.32	J	0.32	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	19		19	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.86	J	0.86	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L

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Checked by: JAR
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV994	LORNG_MMW0007B_10182023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV988	LORNG_OW22003_10182023	Perfluorobutanoic acid (PFBA)	1.3	J	1.3	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1	J	1	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	2		2	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.46	J	0.46	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.71	J	0.71	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.44	J	0.44	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	16		16	J	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV988	LORNG_OW22003_10182023	Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TH8, IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	18		18	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	NJ	TH8, CFD, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L

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Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV988	LORNG_OW22003_10182023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIV995	LORNG_SB/OW16001_10182023	Perfluorobutanoic acid (PFBA)	5.7	J	5.7	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.5		5.5	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.5		3.5	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	7.6		7.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1.8		1.8	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.78	J	0.78	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.52	J	0.52	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	15		15	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.22	J	0.22	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	16		16	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L

Prepared by:AKN
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Checked by: JAR
Date: 4/16/24

Table 3
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Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV995	LORNG_SB/OW16001_10182023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2	J	2	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.4	J	1.4	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.9	J	2.9	J	TH8, TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV996	LORNG_SB/OW16001_10182023FD	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.4		5.4	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	9.7		9.7	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.4		3.4	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	7.3		7.3	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1.8		1.8	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.89	J	0.89	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.52	J	0.52	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	14		14	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	17		17	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.2	J	2.2	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.4	J	0.4	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7572	E1633DR	T	XIV996	LORNG_SB/OW16001_10182023FD	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	1.3	J	1.3	J	TH8, TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

UJ = Analyte not detected; reporting limits estimated

NJ = Analyte has been tentatively identified and concentration is estimated

NG/L = nanograms per liter

CCL = Low continuing calibration verification standard recovery

CFD = Confirmation ion not present

EBL = Analyte detected in equipment blank; concentration in sample is less than LOQ

EISL = Low extracted internal standard recovery

HPHL = Hold time between collection and extraction exceeded

IAG = Transition ion ratio outside limits

LBL = Analyte detected in laboratory blank; concentration in sample is less than LOQ

SNL = Signal to noise ratio outside criteria

TH8 = Elevated sample receipt temperature

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3W2330	LORNG_MMW0020_60_10112023	LORNG_MMW0020_60_10112023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	UJ	2	UJ	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.13	J	0.25	UJ	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.16	J	0.44	UJ	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.3	J	1.2	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	UJ	0.25	UJ	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	2.5	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	5	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
C3W7572	LORNG_BW10006_10182023	LORNG_BW10006_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.6	J	4.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	8.5	NJ	7.8	J	9	
				Perfluorohexanoic acid (PFHxA) (NG/L)	11	J	11	J	0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.3	J	3.7	J	15	
				Perfluorooctanoic acid (PFOA) (NG/L)	10	J	9.8	J	2	
				Perfluorononanoic acid (PFNA) (NG/L)	0.32	J	0.33	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.3	J	2	J	14	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.4	J	2.4	J	34	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	42	J	36	J	15	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.76	J	0.43	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	38	J	35	J	8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.7	UJ	0.27	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	4.4	J	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	5	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
C3W7572	LORNG_SB/OW16001_10182023	LORNG_SB/OW16001_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.7	J	5.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.5	J	5.4	J	2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	11	J	9.7	J	13	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.5	J	3.4	J	3	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.6	J	7.3	J	4	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	J	1.8	J	0	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.78	J	0.89	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.52	J	0.52	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15	J	14	J	7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.22	J	0.47	UJ	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	16	J	17	J	6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2	J	2.2	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.4	J	0.4	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.9	J	1.3	J	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	5	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

NG/L = nanograms per liter

Prepared by: AKN 4/16/24
Checked by: JAR 4/16/24

Table 5 - Split Sample RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Split Sample ID	Method Class	Analyte	Sample Result	Sample Qualifier	Split Result	Split Qualifier	RPD[1]	Flag
C3W7572 / FC10610	LORNG_BW10007_10182023	LORNG_BW10007_10182023SPLIT	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	UJ	3.7	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.13	J	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.25	UJ	0.92	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.38	J	1.8	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	UJ	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.6	J	2	J	22	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	UJ	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.89	J	1.8	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	UJ	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.28	J	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	9.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	18	U	NC	

Prepared by: AKN 4/16/24
Checked by: JAR 4/16/24

Table 5 - Split Sample RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Split Sample ID	Method Class	Analyte	Sample Result	Sample Qualifier	Split Result	Split Qualifier	RPD[1]	Flag
C3W7572 / FC10610	LORNG_JBW7326A_10182023	LORNG_JBW7326A_10182023SPLIT	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.2	J	4.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	9.8	J	8.1		19	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.5	J	7.3		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.5	J	4.1		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.6	J	5.3		6	
				Perfluorononanoic acid (PFNA) (NG/L)	0.51	J	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	J	2	J	0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.6	J	2.5	J	4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	30	J	31.6		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.43	J	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	29	J	20.1		36	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2.3	J	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.18	J	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	1.2	J	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	9.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	18	U	NC	

Table 5 - Split Sample RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Split Sample ID	Method Class	Analyte	Sample Result	Sample Qualifier	Split Result	Split Qualifier	RPD[1]	Flag
C3W7572 / FC10610	LORNG_JBW7345B_10182023	LORNG_JBW7345B_10182023SPLIT	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.4	J	3.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.5	J	5.6	J	2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6	J	6.9		14	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.1	J	4.6		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.9	J	5.5		12	
				Perfluorononanoic acid (PFNA) (NG/L)	0.4	J	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	J	2	J	5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	J	2.8	J	38	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	25	J	30.6		20	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.4	J	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	23	J	26.3		13	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	UJ	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.24	J	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	20	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and reporting limit is estimated

Table 5 - Split Sample RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3V6692, C3V6785, C3W2271, C3W2330, and C3W7572
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Split Sample ID	Method Class	Analyte	Sample Result	Sample Qualifier	Split Result	Split Qualifier	RPD[1]	Flag

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

NG/L = nanograms per liter

Prepared by: AKN 4/16/24
Checked by: JAR 4/16/24

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

APRIL 1, 2024

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
Bureau Veritas	Bureau Veritas Canada
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
EtFOSA	ethyl perfluorooctanesulfonamide
EtFOSE	ethyl perfluorooctanesulfonamidoethanol
FTS	fluorotelomersulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MeFOSA	methyl perfluorooctanesulfonamide
MeFOSE	methyl perfluorooctanesulfonamidoethanol
MS	matrix spike
MSD	matrix spike duplicate
NIS	non-extracted internal standard
PFAS	per- and polyfluoroalkyl substances
PFDoA	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHpS	perfluoroheptanesulfonic acid
PFHxA	perfluorohexanoic acid
PFMBA	perfluoro-4-methoxyburtanoic acid
PFMPA	perfluoro-3-methylpropianoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFPeA	perfluoropentanoic acid
PFTeDA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual

RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 83 aqueous samples, including 6 equipment blanks and 8 field duplicates, between 10 and 23 October 2023 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to Bureau Veritas Canada (Bureau Veritas), located in Mississauga, Ontario, Canada, where they were received between 17 and 26 October 2023 and assigned to job numbers C3W2259, C3W5453, C3W5493, C3W7599, and C3X5365. Bureau Veritas analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 2B validation on 100 percent (%) of primary field samples analyzed by Bureau Veritas in job numbers C3W2259, C3W5453, C3W5493, C3W7599, and C3X5365. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms but does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;

- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
NJ	The analyte has been tentatively identified as present and the concentration is estimated.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CCL	Low CCV recovery. Result may be biased low.
CFD	Confirmation ion was not present in a reported detection of an analyte with a confirmation ion.
EBL	The analyte was detected in the associated equipment blank, and the concentration detected in the sample was less than the limit of quantitation (LOQ).
EISH	High EIS recovery.
EISL	Low EIS recovery.
FDD	Imprecision between primary and field duplicate results.
HPHL	Hold time between collection and extraction exceeded.
IAG	Transition ion ratio is outside of expected limits.
LBL	The analyte was detected in the associated laboratory blank, and the concentration detected in the sample was less than the LOQ.
ISL	Low NIS recovery
PJ	Potential bile salt interference.
SNL	Signal to noise ratio did not meet criteria.
TH8	Elevated sample receipt temperature.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius (°C), with the following exception:

- Bureau Veritas signed the first page of the COC associated with job C3W2259, but not the second or third pages. WSP did not qualify any data based on the missing signatures.
- The field sampling team did not sign the COC associated with job C3X5365 to relinquish sample custody. It is assumed sample custody was maintained because the custody seals were intact when the samps were received at the laboratory. WSP did not qualify any data based on the missing signatures.
- The recorded sample receipt temperatures for job C3W7599 were between 5.9 and 8.8 °C. It was not possible to determine which samples were received in each cooler and per the DoD Data Validation Guidelines, WSP J qualified the detected and UJ qualified the non-detected PFAS results from samples LORNG_JBW7347B_10182023, LORNG_JBW7347B_10182023FD, LORNG_OW21005_10182023, and LORNG_OW21005_10182023FD because of the elevated sample receipt temperatures. (J/UJ, TH8)
- The case narrative for job C3X5365 states that the samples were analyzed past the method-specified maximum holding time. Inspection of the sample collection, extraction, and analysis dates indicate the samples were extracted within the method-specified holding time of 28 days from collection and analyzed within 90 days of extraction. WSP did not qualify any data based on the erroneous holding time information in the case narrative.
- The case narrative for job C3W5493 states that the EIS concentrations are twice what is specified in the laboratory's standard operation procedure. Data quality is not affected because the laboratory adjusted the quantification calculation to take the higher EIS concentrations into account.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 9.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Bureau Veritas may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction, with the following exception:

- According to the case narrative for job C3W7599, samples LORNG_OW21005_10182023 and LORNG_OW21005_10182023FD were originally extracted within the method-specified maximum hold time

and then re-extracted 49 days outside the method-specified hold time. Based on professional judgement, WSP J qualified the detected and UJ qualified the non-detected PFAS results from samples LORNG_OW21005_10182023 and LORNG_OW21005_10182023FD because of the grossly exceeded hold time. (J/UJ, HPHL)

7.1.2 MASS CALIBRATION FREQUENCY

According to the laboratory's notes, the analytical instrument underwent mass calibration to the instrument manufacturer's specifications and using the manufacturer's recommended standard less than a year before the samples reviewed in this report were analyzed.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical sequence, concentrations were equivalent to the LOQ, and signal to noise ratios were greater than or equal to 3:1. The target compound recoveries were within the method-specified 70 to 130% limits, except as noted below.

- 3-Perfluoropropyl propanoic acid (3:3 FTCA) recovery is low at 66% in the ISC associated with the analysis of samples LORNG_JBW7347B_10182023FD and LORNG_OW21005_10182023FD. Based on professional judgement, WSP UJ qualified the non-detected 3:3 FTCA results from the associated samples because of the low ISC recovery. (UJ, CCL)
- 3:3 FTCA recovery is low at 64% in the ISC associated with the analysis of samples in job C3X5365. Based on professional judgement, WSP UJ qualified the non-detected 3:3 FTCA results from samples LORNG_043-MW03_10232023, LORNG_MMW3402R_10232023, LORNG_USMW025_10192023FD, LORNG_USMW025_10192023, LORNG_JPZ0606_10202023, LORNG_JMW-0806_10192023, LORNG_AA18MW-02_10192023, LORNG_OW10005_10202023, LORNG_BW20002_10192023, LORNG_OW20007_10192023, LORNG_BW17005_10202023, LORNG_OW17002_10192023, LORNG_BB_OW001_10232023, LORNG_BW01006_10202023, LORNG_BW18009_10192023, LORNG_OW20003_10202023, LORNG_BW13001_10192023, LORNG_EBGB_BW002_10192023, and LORNG_BW18010_10192023 because of the low ISC recovery. (UJ, CCL)

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recovery of target compound is within the method-specified 70 to 130% limits.

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS), with the following exception:

- The bile salt peak was not visible on instrument LCMS05 (reports C3W7599 and C3X5365) making it impossible to determine whether bile salt interference peaks elute more than one minute before linear or branched PFOS peaks. Data limitations are summarized below.
    - Per the DoD data validation guidelines, WSP J qualified the detected PFOS result from sample LORNG_AA18-MW02_10192023 because the ion ratio is outside criteria and WSP was not able to determine from the laboratory data report if there is potential for interference from bile salts. (J, PJ)
    - PFOS detection in the remaining associated sample met ion ratio criteria and data usability is not adversely affected by not being able to assess potential interference from bile salts.

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory and equipment blanks associated with the samples reviewed in this report, with the following exception:

- Perfluorooctanesulfonamide (PFOSA) was detected at a concentration of 0.23 nanograms per liter (ng/L) in the laboratory blank associated with the extraction of samples LORNG_OW21005_10182023, LORNG_JBW7347B_10182023, and LORNG_JBW7347B_10182023FD (report C3W7599). WSP U qualified the PFOSA results from the associated samples because the concentrations detected in the samples were greater than the LOD but less than the LOQ. (U, LBL)
- PFOSA was detected at a concentration of 0.13 ng/L in the laboratory blank associated with the extraction of samples LORNG_JPZ0606_10202023, LORNG_OW10005_10202023, and LORNG_OW20003_10202023. Data limitations are summarized below.
    - WSP U qualified the PFOSA results from samples LORNG_JPZ0606_10202023 and LORNG_OW10005_10202023 because the concentrations detected in the samples were greater than the LOD but less than the LOQ. (U, LBL)
    - PFOSA was not detected in the remaining associated sample and data usability is not adversely affected by the blank detection.
- PFOSA (2.1 ng/L), ethyl-perfluorooctanesulfonamidoethanol (EtFOSE [1.7 ng/L]), perfluoroheptanoic acid (PFHpA [0.33 ng/L]), perfluorohexanoic acid (PFHxA [0.19 ng/L]), and PFOS (0.66 ng/L) were detected in equipment blank LORNG_EB008_10172023, associated with sample LORNG_LF2MW1_10172023. Data limitations are summarized below.
    - WSP U qualified the PFOSA and PFHpA results from sample LORNG_LF2MW1_10172023 because the concentrations detected in the sample are greater than the LOD but less than the LOQ. (U, EBL)
    - The remaining analytes either were not detected in the associated sample or the detected concentrations were greater than both the LOQ and five times the concentrations detected in the blank. Data usability is not adversely affected by the blank detections.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY AND PRECISION

Low level LCS (LLCS) and an LCS/LCSD pair were included with each extraction batch. LLCS spike concentrations were twice the LOQ. LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between LCS and LCS duplicate results were less than 30%.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

Bureau Veritas performed MS and MSD analyses on sample LORNG_JPZ808_10122023. MS and MSD recoveries were within the QAPP-specified LCS limits and RPDs between MS and MSD results were less than 30%.

7.1.11 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries were within the QAPP-specified 20 to 150% interim limits, with the following exceptions:

- Recoveries of the EISs $^{13}C_2$-perfluorotetradecanoic acid (PFTeDA [3.4%]), D_3-methyl perfluorooctanesulfonamide (MeFOSA [1.1%]), D_5-ethyl perfluorooctanesulfonamide (EtFOSA [0.39%]), D_7-methyl perfluorooctanesulfonamidoethanol (MeFOSE [12%]), and D_9-EtFOSE (7.1%) were low in sample LORNG_JBW7203A_10172023. Data limitations are summarized below.
  - Based on professional judgement, WSP R qualified and rejected the perfluorotridecanoic acid (PFTrDA), PFTeDA, MeFOSA, EtFOSA, and EtFOSE results from sample LORNG_JBW7203A_10172023 because of extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detected MeFOSE result from sample LORNG_JBW7203A_10172023 because of the low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-perfluorododecanoic acid (PFDoA [11%]), $^{13}C_2$-PFTeDA (1.7%), D_3-MeFOSA (0.85%), D_5-EtFOSA (0.18%), D_7-MeFOSE (1.2%), and D_9-EtFOSE (0.54%) were low in sample LORNG_JMW1762_10172023. Data limitations are summarized below.
  - Based on professional judgement, WSP R qualified and rejected the PFTrDA, PFTeDA, MeFOSA, EtFOSA, MeFOSE, and EtFOSE results from sample LORNG_JMW1762_10172023 because of the extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detected PFDoA result from sample LORNG_JMW1762_10172023 because of the low EIS recovery. (UJ, EISL)
- Recovery of the EIS D_5-ethyl perfluorooctanesulfonamide (EtFOSA) was low at 18% in sample LORNG_OW10007_10172023. WSOP UJ qualified the non-detected EtFOSE result because of the low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-PFTeDA (2.9%), D_3-MeFOSA (0.37%), D_5-EtFOSA (0.12%), D7-MeFOSE (14%), and D_9-EtFOSE (8.9%) were low in sample LORNG_BW16002_10172023. Data limitations are summarized below.
  - Based on professional judgement, WSP R qualified and rejected the PFTrDA, PFTeDA, MeFOSA, EtFOSA, and EtFOSE results from sample LORNG_BW16002 because if the extremely low EIS recoveries. (X, EISL)
  - WSP UJ qualified the non-detected MeFOSE result from sample LORNG_BW16002_10172023 because of the low EIS recovery. (UJ, ISL)
- Recoveries of the EISs $^{13}C_2$-4:2 fluorotelomersulfonic acid (FTS) and $^{13}C_5$-perfluoropentanoic acid (PFPeA) were high at 208% and 232%, respectively, in sample LORNG_BW18009_10192023. Data limitations are summarized below.
  - WSP J- qualified the detected PFPeA result from sample LORNG_BW18009_10192023 because of the high EIS recovery. (J-, EISH)
  - 4:2 FTS, perfluoro-3-methylpropianoic acid (PFMPA), perfluoro-4-methoxyburtanoic acid (PFMBA), and 3:3 FTCA were not detected in sample LORNG_BW18009_10192023 and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-4:2 FTS and $^{13}C_5$-PFPeA were high at 159% and 157%, respectively, in sample LORNG_USMW025_10192023. Data limitations are summarized below.
  - WSP J- qualified the detected PFPeA result from sample LORNG_USMW025_10192023 because of the high EIS recovery. (J-, EISH)
  - 4:2 FTS, PFMPA, PFMBA, and 3:3 FTCA were not detected in sample LORNG_USMW025_10192023 and data usability is not adversely affected by the high EIS recoveries.

- Recoveries of the EISs D_3-MeFOSA and D_5-EtFOSA were low at 8.0% and 7.8%, respectively, in sample LORNG_AA18MW-02_10192023. Based on professional judgement, WSP R qualified and rejected the MeFOSA and EtFOSA results from this sample because of the extremely low EIS recoveries. (R, EISL)
- Recoveries of the EISs D_3-MeFOSA and D_5-EtFOSA were low at 19% and 17%, respectively, in sample LORNG_BW01006_10202023. WSP UJ qualified the MeFOSA and EtFOSA results from this sample because of the low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs D_3-MeFOSA and D_5-EtFOSA were low at 9.5% and 7.2%, respectively, in sample LORNG_BW17005_10202023. Based on professional judgement, WSP R qualified and rejected the MeFOSA and EtFOSA results from this sample because of the extremely low EIS recoveries. (R, EISL)
- Recoveries of the EIS $^{13}C_2$-4:2 FTS were high in samples LORNG_JPZ0606_10202023 and LORNG_OW10005_10202023 at 171% and 197%, respectively. 4:2 FTS was not detected in these samples and data usability is not adversely affected by the high EIS recoveries.

7.1.12 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exceptions:

- Several samples have NIS recovery above the 200% limit. The DoD Data Validation Guidelines do not specify any action for high NIS recoveries and WSP did not qualify any data based on high NIS recovery.
- Recovery of the NIS $^{13}C_4$-PFOS was low at 47% in sample LORNG_JMW1762_10172023. Data limitations are summarized below.
    - WSP J qualified the detected perfluoroheptanesulfonic acid (PFHpS) and PFOS results from sample LORNG_JMW1762_10172023 because of the low NIS recovery. (J, ISL)
    - WSP UJ qualified the non-detected perfluorononanesulfonic acid, perfluorodecanesulfonic acid, perfluorododecanesulfonic acid, PFOSA, methyl perfluorooctanesulfonamidoacetic acid, and ethyl perfluorooctanesulfonamidoacetic acid results from sample LORNG_JMW1762_10172023because of the low NIS recovery. (UJ, ISL)
    - The EtFOSA, EtFOSE, MeFOSA, and MeFOSE results were previously rejected due to low EIS recoveries and the data were not additionally qualified due to the low NIS recovery.

7.1.13 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.14 DATA REPORTING AND ANALYTICAL PROCEDURES

WSP J qualified the following results because the ion ratios were outside of expected limits according to Bureau Veritas' notes. (J, IAG)

- PFPeA in samples LORNG_BW05010_10122023, LORNG_BW20002_10192023, LORNG_EBGB_BW002_10192023, LORNG_JBW7347B_10182023, LORNG_JPZ_0686_10132023, LORNG_JPZ7808_10122023, LORNG_OW16003_10122023, and LORNG_OW20007_10192023;
- PFPeA and PFOS in sample LORNG_JBW7107-10122023,
- PFPeA and PFOSA in samples LORNG_BW18009_10192023, LORNG_JPZ0606_10202023, LORNG_MMW3402R_10232023, and LORNG_USMW025_10192023FD;
- PFHxA and perfluorononanoic acid in samples LORNG_BW13001_10192023 and LORNG_USMW024_10122023;
- Perfluorooctanoic acid in samples LORNG_BW22001_10122023 and LORNG_MMW0015_10122023;
- Perfluorobutanesulfonic acid in sample LORNG_BW05006_10122023;

- PFHpS in samples LORNG_JBW7714_10132023, LORNG_JMW1762_10172023, and LORNG_OW20004_10132023FD;
- PFOS in sample LORNG_AA18MW-02_10192023; and
- PFOSA in samples LORNG_BW01006_10202023, LORNG_BW18010_10192023, LORNG_LF2MW1_10172023, LORNG_OW10005_10202023, LORNG_OW20002_10172023, and LORNG_USMW025_10192023.

According to Bureau Veritas' notes, the signal to noise ratios for the PFPeA detections in samples LORNG_BW18010_10192023, LORNG_BW20002_10192023, LORNG_EBGB_BW002_10192023, and LORNG_RFW-38_10122023 did not meet method-specified minimum criteria. Per the DoD data validation guidelines, WSP J qualified these results because of the low signal to noise ratio. (J, SNL)

According to Bureau Veritas' notes, the PFPeA results from samples LORNG_JBW7347B_10182023FD and LORNG_USMW025_10192023 and the PFOSA result from sample LORNG_043-MW03_10232023 did not meet identification criteria because the confirmation ions were not detected. Based on professional judgement, WSP NJ qualified these results as being tentatively identified with estimated concentrations because the confirmation ions were not detected. (NJ, CFD)

Bureau Veritas J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Eurofins' J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_OW20004_10132023, LORNG_MMW0007A_10122023, LORNG_JMW6001_10172023, LORNG_JMW-0602_10172023, LORNG_LF3MW3_10162023, LORNG_JBW7347B_10182023, LORNG_OW21005_10182023, and LORNG_USMW025_10192023. Except as noted below, precision between primary and field duplicate results was acceptable, with RPDs less than 30% or differences between concentrations less than the average LOQ. Detections in the field duplicate pairs are summarized in Table 4.

- The RPD between PFOSA results from sample LORNG_JMW-0602_10172023 and its field duplicate LORNG_JMW-0602_10172023 was high at 65%. WSP J qualified the PFOSA results from this field duplicate pair because of potential sampling and/or analytical imprecision. (J, FDD)
- The differences between detected and non-detected PFOSA and MeFOSE results from sample LORNG_OW21005_10182023 and its field duplicate LORNG_OW21005_10182023 are greater than the average LOQs. WSP J qualified the detected and UJ qualified the non-detected PFOSA and MeFOSE results from this field duplicate pair due to potential sampling and/or analytical imprecision. (J/UJ, FDD)

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 2,160 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 20 records (0.93%) because of extremely low EIS recoveries.
- J: WSP J qualified 440 records (20%) due to hold time exceedances, elevated sample receipt temperatures, low ICS recovery, low NIS recovery, potential bile salt interference, detected concentrations less than the LOQ, transition ion ratios outside of expected limits, signal to noise ratios outside of limits, and/or imprecision between primary and field duplicate results.
- J-: WSP J- qualified 1 record (0.05%) because of high EIS recovery.
- NJ: WSP NJ qualified 3 records (0.14%) as being qualitatively and quantitatively uncertain because the secondary transition ions were not detected.
- U: WSP U qualified 1 record (0.05%) because of a detection in the associated equipment blank.

- UJ: WSP UJ qualified 146 records (6.7%) due to elevated sample receipt temperatures, missed hold times, low ISC recoveries, detections in the associated equipment or laboratory blanks with other quality control exceedances, low NIS or EIS recoveries, and/or imprecision between primary and field duplicate results.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

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DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLES

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3W2259	BW05006	LORNG_BW05006_10122023	XHT733	10/12/2023	WG	N	40
	BW05010	LORNG_BW05010_10122023	XHT698	10/12/2023	WG	N	40
	BW06008	LORNG_BW06008_10122023	XHT699	10/12/2023	WG	N	40
	BW22001	LORNG_BW22001_10122023	XHT734	10/12/2023	WG	N	40
	EBGB_BW001	LORNG_EBGB_BW001_10122023	XHT700	10/12/2023	WG	N	40
	EBGB_OW002	LORNG_EBGB_OW002_10122023	XHT701	10/12/2023	WG	N	40
	FIELDQC	LORNG_EB006_10122023	XHT843	10/12/2023	WQ	EB	40
	JBW7105	LORNG_JBW7105_10122023	XHT702	10/12/2023	WG	N	40
	JBW7107	LORNG_JBW7107_10122023	XHT703	10/12/2023	WG	N	40
	JBW7714	LORNG_JBW7714_10132023	XHT844	10/13/2023	WG	N	40
	JMW-0416B	LORNG_JMW-0416B_10132023	XHT845	10/13/2023	WG	N	40
	JMW0681	LORNG_JMW0681_10122023	XHT735	10/12/2023	WG	N	40
	JPZ0686	LORNG_JPZ0686_10132023	XHT846	10/13/2023	WG	N	40
	JPZ7808	LORNG_JPZ7808_10122023	XHT736	10/12/2023	WG	N	40
	MMW0002	LORNG_MMW0002_10122023	XHT704	10/12/2023	WG	N	40
	MMW0007A	LORNG_MMW0007A_10122023	XHT705	10/12/2023	WG	N	40
		LORNG_MMW0007A_10122023FD	XHT737	10/12/2023	WG	FD	40
	MMW0009	LORNG_MMW0009_10122023	XHT738	10/12/2023	WG	N	40
	MMW0015	LORNG_MMW0015_10122023	XHT739	10/12/2023	WG	N	40
	MMW0422	LORNG_MMW0422_10132023	XHT847	10/13/2023	WG	N	40
	MMW0423	LORNG_MMW0423_10132023	XHT848	10/13/2023	WG	N	40
	OW16002	LORNG_OW16002_10132023	XHT849	10/13/2023	WG	N	40
	OW16003	LORNG_OW16003_10122023	XHT706	10/12/2023	WG	N	40
	OW20004	LORNG_OW20004_10132023	XHT850	10/13/2023	WG	N	40
		LORNG_OW20004_10132023FD	XHT851	10/13/2023	WG	FD	40
	OW22001	LORNG_OW22001_10122023	XHT740	10/12/2023	WG	N	40
	RFW-38	LORNG_RFW-38_10122023	XHT707	10/12/2023	WG	N	40
	UNK-036	LORNG_UNK-036_10122023	XHT741	10/12/2023	WG	N	40
	USMW024	LORNG_USMW024_10122023	XHT708	10/12/2023	WG	N	40
	WBGB_BW001	LORNG_WBGB_BW001_10132023	XHT852	10/13/2023	WG	N	40
C3W5453	JBW7203A	LORNG_JBW7203A_10172023	XIK522	10/17/2023	WG	N	40
	JBW7203B	LORNG_JBW7203B_10172023	XIK523	10/17/2023	WG	N	40
	JMW1762	LORNG_JMW1762_10172023	XIK524	10/17/2023	WG	N	40
	JMW6001	LORNG_JMW6001_10172023	XIK526	10/17/2023	WG	N	40
		LORNG_JMW6001_10172023FD	XIK525	10/17/2023	WG	FD	40
	JPZ0349	LORNG_JPZ0349_10172023	XIK527	10/17/2023	WG	N	40
C3W5493	BB_BW001	LORNG_BB_BW001_10162023	XIK729	10/16/2023	WG	N	40
	BW14005	LORNG_BW14005_10172023	XIK766	10/17/2023	WG	N	40
	BW16002	LORNG_BW16002_10172023	XIK730	10/17/2023	WG	N	40
	BW17004	LORNG_BW17004_10162023	XIK731	10/16/2023	WG	N	40
	FIELDQC	LORNG_EB007_10162023	XIK732	10/16/2023	WQ	EB	40
		LORNG_EB008_10172023	XIK776	10/17/2023	WQ	EB	40
	JBW8009	LORNG_JBW8009_10172023	XIK767	10/17/2023	WG	N	40
	JMW-0505	LORNG_JMW-0505_10172023	XIK768	10/17/2023	WG	N	40
	JMW-0602	LORNG_JMW-0602_10172023	XIK769	10/17/2023	WG	N	40
		LORNG_JMW-0602_10172023FD	XIK770	10/17/2023	WG	FD	40
	JMW0992	LORNG_JMW0992_10162023	XIK733	10/16/2023	WG	N	40
	JMW7322	LORNG_JMW7322_10172023	XIK734	10/17/2023	WG	N	40

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
	LF2MW1	LORNG_LF2MW1_10172023	XIK771	10/17/2023	WG	N	40
C3W5493	LF3MW3	LORNG_LF3MW3_10162023	XIK735	10/16/2023	WG	N	40
		LORNG_LF3MW3_10162023FD	XIK736	10/16/2023	WG	FD	40
	MMW0132	LORNG_MMW0132_10172023	XIK772	10/17/2023	WG	N	40
	OW10007	LORNG_OW10007_10172023	XIK777	10/17/2023	WG	N	40
	OW20002	LORNG_OW20002_10172023	XIK737	10/17/2023	WG	N	40
	OW20005	LORNG_OW20005_10172023	XIK773	10/17/2023	WG	N	40
	SB/OW17001	LORNG_SB/OW17001_10162023	XIK738	10/16/2023	WG	N	40
	USMW013	LORNG_USMW013_10162023	XIK739	10/16/2023	WG	N	40
C3W7599	JBW7347B	LORNG_JBW7347B_10182023	XIW094	10/18/2023	WG	N	40
		LORNG_JBW7347B_10182023FD	XIW095	10/18/2023	WG	FD	40
	OW21005	LORNG_OW21005_10182023	XIW096	10/18/2023	WG	N	40
		LORNG_OW21005_10182023FD	XIW097	10/18/2023	WG	FD	40
C3X5365	043-MW03	LORNG_043-MW03_10232023	XKN434	10/23/2023	WG	N	40
	AA18MW-02	LORNG_AA18MW-02_10192023	XKN424	10/19/2023	WG	N	40
	BB_OW001	LORNG_BB_OW001_10232023	XKN425	10/23/2023	WG	N	40
	BW01006	LORNG_BW01006_10202023	XKN426	10/20/2023	WG	N	40
	BW13001	LORNG_BW13001_10192023	XKN401	10/19/2023	WG	N	40
	BW17005	LORNG_BW17005_10202023	XKN427	10/20/2023	WG	N	40
	BW18009	LORNG_BW18009_10192023	XKN402	10/19/2023	WG	N	40
	BW18010	LORNG_BW18010_10192023	XKN403	10/19/2023	WG	N	40
	BW20002	LORNG_BW20002_10192023	XKN404	10/19/2023	WG	N	40
	EBGB_BW002	LORNG_EBGB_BW002_10192023	XKN405	10/19/2023	WG	N	40
	FIELDQC	LORNG_EB010_10192023	XKN428	10/19/2023	WQ	EB	40
		LORNG_EB011_10192023	XKN429	10/19/2023	WQ	EB	40
		LORNG_EB012_10192023	XKN430	10/19/2023	WQ	EB	40
	JMW-0806	LORNG_JMW-0806_10192023	XKN406	10/19/2023	WG	N	40
	JPZ0606	LORNG_JPZ0606_10202023	XKN431	10/20/2023	WG	N	40
	MMW3402R	LORNG_MMW3402R_10232023	XKN435	10/23/2023	WG	N	40
	OW10005	LORNG_OW10005_10202023	XKN432	10/20/2023	WG	N	40
	OW17002	LORNG_OW17002_10192023	XKN407	10/19/2023	WG	N	40
	OW20003	LORNG_OW20003_10202023	XKN433	10/20/2023	WG	N	40
	OW20007	LORNG_OW20007_10192023	XKN408	10/19/2023	WG	N	40
	USMW025	LORNG_USMW025_10192023	XKN409	10/19/2023	WG	N	40
		LORNG_USMW025_10192023FD	XKN410	10/19/2023	WG	FD	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

				SDG	C3W2259													
				Location	BW05006	BW05010	BW06008	BW22001	EBGB_BW001	EBGB_OW002	FIELDQC	JBW7105	JBW7107	JBW7714	JMW-0416B	JMW0681	JPZ0686	JPZ7808
				Sample Date	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/13/2023	10/13/2023	10/12/2023	10/13/2023	10/12/2023
				Sample ID	LORNG_BW05006_10122023	LORNG_BW05010_10122023	LORNG_BW06008_10122023	LORNG_BW22001_10122023	LORNG_EBGB_BW001_10122023	LORNG_EBGB_OW002_10122023	LORNG_EB006_10122023	LORNG_JBW7105_10122023	LORNG_JBW7107_10122023	LORNG_JBW7714_10132023	LORNG_JMW-0416B_10132023	LORNG_JMW0681_10122023	LORNG_JPZ0686_10132023	LORNG_JPZ7808_10122023
				QC Code	N	N	N	N	N	N	EB	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	0.67 J	2 U	4 J	2 U	1.2 J	0.62 J	2 U	1.5 J	0.68 J	12	2.2 J	2.5 J	2.7 J	1.6 J
		Perfluoropentanoic acid (PFPeA)	NG/L	0.68 J	0.43 J	3.8	0.5 U	1.5 J	1.1 J	0.5 U	3.5	0.94 J	33	3.1 J	2.4 J	0.95 J	0.41 J
		Perfluorohexanoic acid (PFHxA)	NG/L	0.48 J	0.5 J	3.7	0.31 J	1.2 J	1.1 J	0.5 U	2.3	0.64 J	23	1.5 J	2.6	0.84 J	0.57 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.3 J	0.28 J	3.7	0.5 U	0.6 J	0.47 J	0.5 U	0.75 J	0.29 J	29	0.42 J	1.1 J	0.59 J	0.33 J
		Perfluorooctanoic acid (PFOA)	NG/L	0.83 J	0.78 J	2.4	0.34 J	1.2 J	1.2 J	0.25 U	0.9 J	0.44 J	27	0.78 J	1.9	1.4 J	0.68 J
		Perfluorononanoic acid (PFNA)	NG/L	0.5 U	0.5 U	0.56 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.4	0.5 U	0.5 U	0.26 J	0.5 U
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.24 J	0.68 J	0.92 J	0.17 J	0.66 J	0.26 J	0.44 U	0.96 J	0.54 J	0.67 J	0.25 J	1.7	0.56 J	0.54 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47 U	0.52 J	0.67 J	0.47 U	0.67 J	0.27 J	0.47 U	0.58 J	0.32 J	0.56 J	0.33 J	1.7	0.32 J	0.33 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	3.3	7.9	2.8	5.3	2.7	0.47 U	2.5	1.6	10	3.6	13	5.4	6.5
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.47 U	0.19 J	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.18 J	0.47 U	0.2 J	0.47 U	0.47 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.7	3.7	11	1.6	4.8	0.47 U	0.47 U	1.1 J	0.84 J	17	1.9	7.9	4.1	1.6
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	27	1.9 U	1.9 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	8.1	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

| | | |

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

				SDG	C3W2259																					
				Location	MMW0002	MMW0007A		MMW0009	MMW0015	MMW0422	MMW0423	OW16002	OW16003	OW20004		OW22001	RFW-38	UNK-036									
				Sample Date	10/12/2023	10/12/2023		10/12/2023	10/12/2023	10/13/2023	10/13/2023	10/13/2023	10/12/2023	10/13/2023		10/12/2023	10/12/2023	10/12/2023									
				Sample ID	LORNG_MMW0002_10122023	LORNG_MMW0007A_10122023		LORNG_MMW0009_10122023	LORNG_MMW0015_10122023	LORNG_MMW0422_10132023	LORNG_MMW0423_10132023	LORNG_OW16002_10132023	LORNG_OW16003_10122023	LORNG_OW20004_10132023		LORNG_OW22001_10122023	LORNG_RFW-38_10122023	LORNG_UNK-036_10122023									
				QC Code	N	N		N	N	N	N	N	N	N		N	N	N									
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2	U	2.8	J	2.8	J	1.7	J	2	U	2	J	2.2	J	3.5	J	4.9	J	1.5	J	1.3	J	1.1	J	2	U	2	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5	U	5.8		5.7		0.77	J	0.5	U	1.7	J	2.2	J	5.4		1.2	J	0.5	U	0.5	U	0.9	J	0.31	J	0.5	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.5	U	4.9		4.8		0.91	J	0.5	U	2.1		2.7		6		0.46	J	0.31	J	0.35	J	1.7		0.37	J	0.18	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.5	U	2.3		2.2		0.52	J	0.5	U	1.3	J	1.6		1.9		0.3	J	0.5	U	0.18	J	0.85	J	0.5	U	0.16	J
		Perfluorooctanoic acid (PFOA)	NG/L	0.25	U	2.6		2.5		1.9		0.13	J	2.7		3.8		2.6		1.4	J	0.38	J	0.53	J	2.6		0.63	J	0.89	J
		Perfluorononanoic acid (PFNA)	NG/L	0.5	U	0.5	U	0.16	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.69	J	0.5	U	0.5	U
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.44	U	0.97	J	1.1	J	0.9	J	0.44	U	1.2	J	1.3	J	1.1	J	0.55	J	0.9	J	0.88	J	0.64	J	0.44	U	0.27	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47	U	0.77	J	0.83	J	0.8	J	0.47	U	0.99	J	1.4	J	0.86	J	0.27	J	0.73	J	0.86	J	0.54	J	0.47	U	0.47	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.47	U	8.3		8.4		14		0.39	J	15		19		7.5		2.9		8.4		8.9		18		0.57	J	1.3	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.2	J	0.31	J	0.47	U	0.47	U	0.21	J	0.27	J	0.39	J	0.47	U	0.47	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.47	U	7.6		8.5		2.4		1.4	J	6.8		10		2.6		1	J	8.8		9.7		36		0.47	U	7	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.1	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

				SDG	C3W2259																											
				Location	MMW0002		MMW0007A			MMW0009		MMW0015		MMW0422		MMW0423		OW16002		OW16003		OW20004			OW22001		RFW-38		UNK-036			
				Sample Date	10/12/2023		10/12/2023			10/12/2023		10/12/2023		10/13/2023		10/13/2023		10/13/2023		10/12/2023		10/13/2023			10/12/2023		10/12/2023		10/12/2023			
				Sample ID	LORNG_MMW0002_10122023		LORNG_MMW0007A_10122023		LORNG_MMW0007A_10122023FD	LORNG_MMW0009_10122023		LORNG_MMW0015_10122023		LORNG_MMW0422_10132023		LORNG_MMW0423_10132023		LORNG_OW16002_10132023		LORNG_OW16003_10122023		LORNG_OW20004_10132023		LORNG_OW20004_10132023FD	LORNG_OW22001_10122023		LORNG_RFW-38_10122023		LORNG_UNK-036_10122023			
				QC Code	N		N		FD	N		N		N		N		N		N		N		FD	N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

				SDG	C3W2259		C3W5453						C3W5493						
				Location	USMW024	WBGB_BW001	JBW7203A	JBW7203B	JMW1762	JMW6001		JPZ0349	BB_BW001	BW14005	BW16002	BW17004	FIELDQC		JBW8
				Sample Date	10/12/2023	10/13/2023	10/17/2023	10/17/2023	10/17/2023	10/17/2023		10/17/2023	10/16/2023	10/17/2023	10/17/2023	10/16/2023	10/16/2023	10/17/2023	10/17/
				Sample ID	LORNG_USMW024_10122023	LORNG_WBGB_BW001_10132023	LORNG_JBW7203A_10172023	LORNG_JBW7203B_10172023	LORNG_JMW1762_10172023	LORNG_JMW6001_10172023	LORNG_JMW6001_10172023FD	LORNG_JPZ0349_10172023	LORNG_BB_BW001_10162023	LORNG_BW14005_10172023	LORNG_BW16002_10172023	LORNG_BW17004_10162023	LORNG_EB007_10162023	LORNG_EB008_10172023	LORNG_J_1017
				QC Code	N	N	N	N	N	N	FD	N	N	N	N	N	EB	EB	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	0.69 J	1.8 J	5.9 J	5.6 J	3.3 J	5.2 J	5.3 J	2.2 J	1.7 J	4.2 J	1.1 J	2.1 J	2 U	1.8 U	7.9
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5 U	2.7 J	12	11	5	3.3	3.6	3.8	4	5.8	1.7 J	3.9	0.5 U	0.46 U	14
		Perfluorohexanoic acid (PFHxA)	NG/L	0.15 J	3.1	9.1	8.8	4.7	3.4	3.7	3.7	4.7	8.9	2.7	4	0.5 U	0.19 J	8.3
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.2 J	1.1 J	5.9	5.5	2.7	2.2	2.4	1.6	0.98 J	2.8	0.3 J	2.5	0.5 U	0.33 J	6.7
		Perfluorooctanoic acid (PFOA)	NG/L	0.89 J	1.8	6	6.4	4.3	2.7	3.2	4.1	3.4	8.1	0.23 U	3.7	0.25 U	0.23 U	5.7
		Perfluorononanoic acid (PFNA)	NG/L	0.18 J	0.5 U	0.79 J	0.63 J	0.3 J	0.7 J	0.7 J	0.33 J	0.45 U	0.32 J	0.45 U	0.23 J	0.5 U	0.46 U	0.54
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	1 U	0.93 U	0.98 U	0.89 U	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 U	1 U	1 U	0.92 U	0.93
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U	0.5 U	0.47 U	0.49 U	0.45 U	0.45 U	0.45 U	0.47 U	0.45 U	0.45 U	0.45 U	0.5 U	0.5 U	0.46 U	0.47
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	1 U	0.93 U	0.98 U	0.89 UJ	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 U	1 U	1 U	0.92 U	0.93
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	1 U	0.93 R	0.98 U	0.89 R	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 R	1 U	1 U	0.92 U	0.93
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U	0.5 U	0.47 R	0.49 U	0.45 R	0.45 U	0.45 U	0.47 U	0.45 U	0.45 U	0.45 R	0.5 U	0.5 U	0.46 U	0.47
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.45 J	1.4	2.2	2.1	1.9	0.77 J	0.78 J	0.89 J	1 J	2.1	0.4 U	0.84 J	0.44 U	0.41 U	1.7
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.47 U	1.4 J	2.7	2.6	2.3	0.82 J	0.86 J	0.86 J	0.78 J	2.5	0.43 U	0.78 J	0.47 U	0.43 U	1.9
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.1 J	7	26	27	28	15	15	17	11	31	0.96 J	13	0.47 U	0.43 U	21
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47 U	0.21 J	0.61 J	0.62 J	0.55 J	0.26 J	0.32 J	0.2 J	0.43 U	0.52 J	0.43 U	0.47 U	0.47 U	0.43 U	0.31
		Perfluorooctanesulfonic acid (PFOS)	NG/L	3.8	9.5	30	35	23 J	15	16	11	3.3	25	0.43 U	8.1	0.47 U	0.66 J	19
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U	0.94 U	0.88 U	0.92 U	0.84 UJ	0.85 U	0.85 U	0.88 U	0.85 U	0.84 U	0.85 U	0.94 U	0.94 U	0.87 U	0.88
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U	0.47 U	0.44 U	0.46 U	0.42 UJ	0.42 U	0.42 U	0.44 U	0.43 U	0.42 U	0.43 U	0.47 U	0.47 U	0.43 U	0.44
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	1 U	0.93 U	0.98 U	0.89 UJ	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 U	1 U	1 U	0.92 U	0.93
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.9 U	1.9 U	1.8 U	1.8
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.7 U	1.8 J	1.2 J	1.8 U	1.7 U	0.95 J	1.7 U	1.9 U	1.9 U	1.8 U	1.8
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U	3.8 U	3.6 U	3.7 U	3.4 U	3.4 U	3.4 U	3.6 U	3.5 U	3.4 U	3.5 U	3.8 U	3.8 U	3.5 U	3.6
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.25 U	0.25 U	0.23 U	0.25 U	0.22 UJ	0.23 J	0.22 U	0.53 J	0.2 J	0.46 J	0.23 U	0.58 J	0.25 U	2.1	0.93
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	1 U	0.93 R	0.98 U	0.89 R	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 R	1 U	1 U	0.92 U	0.93
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	1 U	0.93 R	0.98 U	0.89 R	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 R	1 U	1 U	0.92 U	0.93
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	1 U	0.93 U	0.98 U	0.89 UJ	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 U	1 U	1 U	0.92 U	0.93
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	1 U	0.93 U	0.98 U	0.89 UJ	0.9 U	0.9 U	0.93 U	0.91 U	0.89 U	0.91 U	1 U	1 U	0.92 U	0.93
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.5 U	2.3 UJ	2.5 U	2.2 R	2.3 U	2.2 U	2.3 U	2.3 U	2.2 U	2.3 UJ	2.5 U	2.5 U	2.3 U	3.3
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U	5 U	4.7 R	4.9 U	4.5 R	4.5 U	4.5 U	4.7 U	4.5 U	4.5 U	4.5 R	5 U	5 U	1.7 J	5.5
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U	4 U	3.7 U	3.9 U	3.6 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	4 U	3.7 U	3.7
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.6 U	3.7 U	3.4 U	3.4 U	3.4 U	3.6 U	3.5 U	3.4 U	3.5 U	3.8 U	3.8 U	3.5 U	3.6
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	1.9 U	2 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	2 U	2 U	1.8 U	1.9
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U	0.5 U	0.47 U	0.49 U	0.45 U	0.45 U	0.45 U	0.47 U	0.45 U	0.45 U	0.45 U	0.5 U	0.5 U	0.46 U	0.47
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U	60 U	56 U	59 U	54 U	54 U	54 U	56 U	55 U	54 U	55 U	60 U	60 U	55 U	56
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U	6.6 U	6.2 U	6.5 U	5.9 U	6 U	5.9 U	6.2 U	6 U	5.9 U	6 U	6.6 U	6.6 U	6.1 U	6.2
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U	6.6 U	6.2 U	6.5 U	5.9 U	6 U	5.9 U	6.2 U	6 U	5.9 U	6 U	6.6 U	6.6 U	6.1 U	6.2
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	3.1 U	2.9 U	3 U	2.8 U	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U	2.8 U	3.1 U	3.1 U	2.9 U	2.9
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U	8.8 U	8.2 U	8.6 U	7.9 U	8 U	7.9 U	8.2 U	8 U	7.9 U	8 U	8.8 U	8.8 U	8.1 U	8.2
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	31 U	29 U	30 U	28 U	28 U	28 U	29 U	28 U	28 U	28 U	31 U	31 U	29 U	29
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	31 U	29 U	30 U	28 U	28 U	28 U	29 U	28 U	28 U	28 U	31 U	31 U	29 U	29

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

				SDG	C3W2259		C3W5453								C3W5493								
				Location	USMW024	WBGB_BW001	JBW7203A	JBW7203B	JMW1762	JMW6001		JPZ0349	BB_BW001	BW14005	BW16002	BW17004	FIELDQC		JBW8			
				Sample Date	10/12/2023	10/13/2023	10/17/2023	10/17/2023	10/17/2023	10/17/2023		10/17/2023	10/16/2023	10/17/2023	10/17/2023	10/16/2023	10/16/2023	10/17/2023	10/17/			
				Sample ID	LORNG_USMW024_10122023	LORNG_WBGB_BW001_10132023	LORNG_JBW7203A_10172023	LORNG_JBW7203B_10172023	LORNG_JMW1762_10172023	LORNG_JMW6001_10172023	LORNG_JMW6001_10172023FD	LORNG_JPZ0349_10172023	LORNG_BB_BW001_10162023	LORNG_BW14005_10172023	LORNG_BW16002_10172023	LORNG_BW17004_10162023	LORNG_EB007_10162023	LORNG_EB008_10172023	LORNG_J_1017			
				QC Code	N	N	N	N	N	N	FD	N	N	N	N	N	EB	EB	N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

		SDG		C3W5493															C3W5493
		Location	009	JMW-0505	JMW-0602		JMW0992	JMW7322	LF2MW1	LF3MW3		MMW0132	OW10007	OW20002	OW20005	SB/OW17001	USMW013
		Sample Date	2023	10/17/2023	10/17/2023		10/16/2023	10/17/2023	10/17/2023	10/16/2023		10/17/2023	10/17/2023	10/17/2023	10/17/2023	10/16/2023	10/16/2023
		Sample ID	3W8009 2023	LORNG_JMW-0505_10172023	LORNG_JMW-0602_10172023	LORNG_JMW-0602_10172023FD	LORNG_JMW0992_10162023	LORNG_JMW7322_10172023	LORNG_LF2MW1_10172023	LORNG_LF3MW3_10162023	LORNG_LF3MW3_10162023FD	LORNG_MMW0132_10172023	LORNG_OW10007_10172023	LORNG_OW20002_10172023	LORNG_OW20005_10172023	LORNG_SB/OW17001_10162023	LORNG_USMW013_10162023
		QC Code		N	N	FD	N	N	N	N	FD	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L		3.2 J	12	13	0.7 J	12	2.8 J	1.8 U	1.8 U	7.1	0.54 J	4.2 J	3.2 J	14	0.58 J
		Perfluoropentanoic acid (PFPeA)	NG/L		2.4 J	3.2	3.3	0.26 J	22	0.97 J	0.45 U	0.45 U	17	0.27 J	7.3	3.6	39	0.41 J
		Perfluorohexanoic acid (PFHxA)	NG/L		2.5	7.9	8.2	0.43 J	19	1.6	0.45 U	0.45 U	6.7	0.5 J	5.3	3.2	25	2
		Perfluoroheptanoic acid (PFHpA)	NG/L		2.7	2.4	2.8	0.24 J	9	0.97 U	0.45 U	0.45 U	6	0.29 J	3.9	2.6	9.7	0.61 J
		Perfluorooctanoic acid (PFOA)	NG/L		2.9	11	12	1.3 J	15	4.6	0.23 U	0.17 J	2.7	0.24 J	4.3	3.3	9	8.9
		Perfluorononanoic acid (PFNA)	NG/L	J	0.7 J	0.37 J	0.42 J	0.45 U	1 J	0.33 J	0.45 U	0.45 U	3.2	0.48 U	0.48 J	0.16 J	1.3 J	0.24 J
		Perfluorodecanoic acid (PFDA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.34 J	0.97 U	1 U	0.91 U	1 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	0.45 U	0.47 U	0.47 U	0.45 U	0.45 U	0.46 U	0.45 U	0.45 U	0.16 J	0.48 U	0.5 U	0.46 U	0.5 U	0.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	0.45 U	0.47 U	0.47 U	0.45 U	0.45 U	0.46 U	0.45 U	0.45 U	0.46 U	0.48 U	0.5 U	0.46 U	0.5 U	0.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L		1.9	2.1	1.9	0.19 J	4.7	0.63 J	0.4 U	0.4 U	0.38 J	0.52 J	1.6	1.3	3.4	0.55 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L		2	2.4	2.5	0.43 U	4.6	0.6 J	0.43 U	0.43 U	0.43 U	0.17 J	1.6	1.5	2.5	0.41 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L		19	42	45	1.6	43	11	0.43 U	0.43 U	0.43 U	2.8	21	18	27	34
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	J	0.16 J	0.98 J	0.97 J	0.43 U	0.7 J	0.22 J	0.43 U	0.43 U	0.43 U	0.45 U	0.35 J	0.67 J	0.35 J	0.46 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L		11	50	53	2.8	32	12	0.43 U	0.43 U	1.5	0.99 J	14	19	18	21
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	0.84 U	0.88 U	0.89 U	0.85 U	0.85 U	0.87 U	0.85 U	0.85 U	0.87 U	0.91 U	0.94 U	0.86 U	0.94 U	0.94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	0.42 U	0.44 U	0.45 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.45 U	0.47 U	0.43 U	0.47 U	0.47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	1.7 U	1.8 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.8 U	1.8 U	1.9 U	1.7 U	1.9 U	1.9 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	U	1.7 U	1.8 U	0.9 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.8 U	3.1 J	1.9 U	1.7 U	1.3 J	1.9 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	3.4 U	3.6 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.7 U	3.8 U	3.5 U	3.8 U	3.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	J	0.4 J	2.4 J	4.7 J	0.53 J	0.32 J	0.58 UJ	0.23 U	0.23 J	1.6	0.74 J	0.21 J	3.9	0.16 J	1.7
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	0.79 J	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 UJ	1 U	0.91 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	0.9 U	0.93 U	0.95 U	0.91 U	0.91 U	0.92 U	0.91 U	0.91 U	0.92 U	0.97 U	1 U	0.91 U	1 U	1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	J	2.2 U	2.3 U	2.4 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.4 U	2.2 J	4.9 J	2.5 U	2.5 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	J	22	2 J	4.5 J	4.5 U	4.5 U	4.6 U	4.5 U	4.5 U	2.1 J	2 J	3.6 J	5.5 J	5 U	5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U	3.7 U	4 U	4 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	3.4 U	3.6 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.7 U	3.8 U	3.5 U	3.8 U	3.8 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2 U	1.8 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	0.45 U	0.47 U	0.47 U	0.45 U	0.45 U	0.46 U	0.45 U	0.45 U	0.46 U	0.48 U	0.5 U	0.46 U	0.5 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	54 U	56 U	57 U	55 U	55 U	55 U	55 U	55 U	55 U	58 U	60 U	55 U	60 U	60 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	5.9 U	6.2 U	6.2 U	6 U	6 U	6.1 U	6 U	6 U	6.1 U	6.4 U	6.6 U	6 U	6.6 U	6.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	5.9 U	6.2 U	6.2 U	6 U	6 U	6.1 U	6 U	6 U	6.1 U	6.4 U	6.6 U	6 U	6.6 U	6.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	2.8 U	2.9 U	2.9 U	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U	2.9 U	3 U	3.1 U	2.8 U	3.1 U	3.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U	7.9 U	8.2 U	8.3 U	8 U	8 U	8.1 U	8 U	8 U	8.1 U	8.5 U	8.8 U	8 U	8.8 U	8.8 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	28 U	29 U	29 U	28 U	28 U	29 U	28 U	28 U	29 U	30 U	31 U	28 U	31 U	31 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	28 U	29 U	29 U	28 U	28 U	29 U	28 U	28 U	29 U	30 U	31 U	28 U	31 U	31 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

		SDG		C3W7599				C3X5365										
		Location		JBW7347B		OW21005		043-MW03	AA18MW-02	BB_OW001	BW01006	BW13001	BW17005	BW18009	BW18010	BW20002	EBGB_BW002	
		Sample Date		10/18/2023		10/18/2023		10/23/2023	10/19/2023	10/23/2023	10/20/2023	10/19/2023	10/20/2023	10/19/2023	10/19/2023	10/19/2023	10/19/2023	
		Sample ID		LORNG_JBW7347B_10182023	LORNG_JBW7347B_10182023FD	LORNG_OW21005_10182023	LORNG_OW21005_10182023FD	LORNG_043-MW03_10232023	LORNG_AA18MW-02_10192023	LORNG_BB_OW001_10232023	LORNG_BW01006_10202023	LORNG_BW13001_10192023	LORNG_BW17005_10202023	LORNG_BW18009_10192023	LORNG_BW18010_10192023	LORNG_BW20002_10192023	LORNG_EBGB_BW002_10192023	LORNG_E1920
		QC Code		N	FD	N	FD	N	N	N	N	N	N	N	N	N	N	EB
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.8 J	2.6 J	3.6 J	4.4 J	5.6	4.2 J	2.6 J	5.5 J	1.7 U	5.2 J	3.4 J	1.9 U	5.2 J	1.8 U	2.2
		Perfluoropentanoic acid (PFPeA)	NG/L	2.9 J	2.9 NJ	3.5 J	3.7 J	4.4	8.5	6	12	0.44 U	12	5.5 J-	1.7 J	10 J	1.2 J	0.56
		Perfluorohexanoic acid (PFHxA)	NG/L	2.9 J	2.3 J	3.7 J	3.3 J	4.3	5.8	8.2	11	1 J	8.1	0.75 J	1.4 J	11	1.1 J	0.56
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.5 J	1.5 J	3.5 J	3.4 J	2.9	3.6	2.7	9.6	0.55 J	7.4	0.46 J	0.21 J	8.3	0.47 J	0.56
		Perfluorooctanoic acid (PFOA)	NG/L	3.5 J	3.5 J	4.6 J	4.5 J	4.6	2.6	13	9.7	0.78 J	4.9	0.81 J	0.41 J	9.6	1.3 J	0.28
		Perfluorononanoic acid (PFNA)	NG/L	0.41 J	0.44 J	0.67 J	0.56 J	1.1 J	0.54 U	0.43 J	1.2 J	0.2 J	0.98 J	0.39 J	0.47 U	0.87 J	0.24 J	0.56
		Perfluorodecanoic acid (PFDA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.42 U	0.54 U	0.54 U	0.56 U	0.44 U	0.56 U	0.46 U	0.47 U	0.47 U	0.45 U	0.56
		Perfluorododecanoic acid (PFDoA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.42 U	0.54 U	0.54 U	0.56 U	0.44 U	0.56 U	0.46 U	0.47 U	0.47 U	0.45 U	0.56
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.97 J	1 J	0.47 J	0.52 J	2.3	0.82 J	2.6	3.4	0.41 J	1.2 J	1 J	0.42 U	1.7	0.22 J	0.49
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.9 J	0.93 J	0.31 J	0.32 J	2.4	0.7 J	2.8	3.7	0.28 J	1.1 J	0.39 J	0.45 U	2.4	0.22 J	0.52
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	14 J	14 J	6.2 J	6.3 J	24	7.5	51	64	3.6	14	10	0.18 J	38	4.4	0.52
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.24 J	0.24 J	0.17 J	0.18 J	1.1 J	0.51 U	0.82 J	0.96 J	0.41 U	0.35 J	0.43 U	0.45 U	0.61 J	0.42 U	0.52
		Perfluorooctanesulfonic acid (PFOS)	NG/L	14 J	15 J	7.7 J	7.9 J	80	5.2 J	40	43	4.5	14	3.8	0.32 J	28	5.6	0.52
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 UJ	0.94 UJ	0.94 UJ	0.94 UJ	0.79 U	1 U	1 U	1.1 U	0.82 U	1.1 U	0.86 U	0.89 U	0.88 U	0.85 U	1
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 UJ	0.47 UJ	0.47 UJ	0.47 UJ	0.39 U	0.51 U	0.51 U	0.53 U	0.41 U	0.53 U	0.43 U	0.45 U	0.44 U	0.42 U	0.52
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 UJ	1.9 UJ	1.7 UJ	1.7 UJ	1.6 U	2.1 U	2.1 U	2.1 U	1.7 U	2.1 U	1.7 U	1.8 U	1.8 U	1.7 U	2.1
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	2.3 J	4.2 J	1.7 UJ	1.7 UJ	1.6 U	2.1 U	2.1 U	2.1 U	1.7 U	2.1 U	1.7 U	1 J	1.8 U	1.7 U	2.1
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.2 U	4.1 U	4.1 U	4.3 U	3.3 U	4.3 U	3.5 U	3.6 U	3.6 U	3.4 U	4.2
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.53 UJ	0.51 UJ	0.7 UJ	3.5 J	0.21 NJ	0.27 U	0.27 U	0.84 J	0.2 J	0.28 U	0.16 J	0.31 J	0.23 J	0.17 J	0.28
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 UJ	1 UJ	1 UJ	0.91 UJ	0.84 U	1.1 R	1.1 U	1.1 UJ	0.87 U	1.1 R	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 UJ	1 UJ	1 UJ	0.91 UJ	0.84 U	1.1 R	1.1 U	1.1 UJ	0.87 U	1.1 R	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 UJ	1 UJ	1 UJ	1 UJ	0.84 U	1.1 U	1.1 U	1.1 U	0.87 U	1.1 U	0.92 U	0.95 U	0.93 U	0.9 U	1.1
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 UJ	2.5 UJ	21 J	2.3 UJ	2.1 U	2.7 U	2.7 U	2.8 U	2.2 U	2.8 U	2.3 U	2.4 U	2.3 U	2.3 U	2.8
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 UJ	5 UJ	5 UJ	4.6 UJ	4.2 U	5.4 U	5.4 U	5.6 U	4.4 U	5.6 U	4.6 U	4.7 U	4.7 U	4.5 U	5.6
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 UJ	4 UJ	4 UJ	4 UJ	3.4 U	4.3 U	4.3 U	4.5 U	3.5 U	4.5 U	3.7 U	3.8 U	3.7 U	3.6 U	4.4
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.2 U	4.1 U	4.1 U	4.3 U	3.3 U	4.3 U	3.5 U	3.6 U	3.6 U	3.4 U	4.2
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 UJ	2 UJ	1.8 UJ	1.8 UJ	1.7 U	2.2 U	2.2 U	2.3 U	1.7 U	2.2 U	1.8 U	1.9 U	1.9 U	1.8 U	2.2
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 UJ	0.5 UJ	0.46 UJ	0.46 UJ	0.42 U	0.54 U	0.54 U	0.56 U	0.44 U	0.56 U	0.46 U	0.47 U	0.47 U	0.45 U	0.56
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 UJ	60 UJ	60 UJ	60 UJ	50 U	65 U	65 U	68 U	52 U	67 U	55 U	57 U	56 U	54 U	67
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	5.5 U	7.1 U	7.1 U	7.4 U	5.7 U	7.4 U	6 U	6.3 U	6.2 U	6 U	7.3
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 UJ	6.6 UJ	6.6 UJ	6.6 UJ	5.5 U	7.1 U	7.1 U	7.4 U	5.7 U	7.4 U	6 U	6.3 U	6.2 U	6 U	7.3
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 UJ	3.1 UJ	3.1 UJ	3.1 UJ	2.6 U	3.3 U	3.3 U	3.5 U	2.7 U	3.5 U	2.8 U	2.9 U	2.9 U	2.8 U	3.4
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 UJ	8.8 UJ	8.8 UJ	8.8 UJ	7.4 UJ	9.5 UJ	9.5 UJ	9.9 UJ	7.7 UJ	9.9 UJ	8.1 UJ	8.3 UJ	8.2 UJ	7.9 UJ	9.8
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 UJ	31 UJ	31 UJ	31 UJ	26 U	33 U	33 U	35 U	27 U	35 U	28 U	29 U	29 U	28 U	34
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 UJ	31 UJ	31 UJ	31 UJ	26 U	33 U	33 U	35 U	27 U	35 U	28 U	29 U	29 U	28 U	34

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

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Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

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Data Usability Summary Report
Loring PFAS RI
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SDGs C3W2259-C3X5365

SDG				C3X5365																	
Location				FIELDQC				JMW-0806	JPZ0606	MMW3402R	OW10005	OW17002	OW20003	OW20007	USMW025						
Sample Date				10/19/2023				10/19/2023	10/20/2023	10/23/2023	10/20/2023	10/19/2023	10/20/2023	10/19/2023	10/19/2023						
Sample ID				B010_1023		LORNG_EB011_10192023		LORNG_EB012_10192023		LORNG_JMW-0806_10192023	LORNG_JPZ0606_10202023	LORNG_MMW3402R_10232023	LORNG_OW10005_10202023	LORNG_OW17002_10192023	LORNG_OW20003_10202023	LORNG_OW20007_10192023	LORNG_USMW025_10192023		LORNG_USMW025_10192023FD		
QC Code						EB		EB		N	N	N	N	N	N	N	N		FD		
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	U	2.2	U	2.1	U	1.8	U	5	J	3.7	J	8.2		13		1.6	J	5.9	J	2	J	1.8	J
		Perfluoropentanoic acid (PFPeA)	NG/L	U	0.55	U	0.54	U	0.46	U	4	J	1.9	J	12		38		1.2	J	9.6	J	5.8	NJ	6.4	J
		Perfluorohexanoic acid (PFHxA)	NG/L	U	0.55	U	0.54	U	1.8		7.5		3.2		14		20		1.5	J	8.3		3		3.1	
		Perfluoroheptanoic acid (PFHpA)	NG/L	U	0.55	U	0.54	U	0.77	J	3		1.7		6.9		15		0.45	J	8.3		2.1		2.1	
		Perfluorooctanoic acid (PFOA)	NG/L	U	0.27	U	0.27	U	1.9		5.3		3.2		8.4		9		1.5	J	9.6		3.4		3.4	
		Perfluorononanoic acid (PFNA)	NG/L	U	0.55	U	0.54	U	0.51	J	2.2		0.99	J	0.71	J	1.1	J	0.5	U	0.87	J	0.76	J	0.7	J
		Perfluorodecanoic acid (PFDA)	NG/L	U	1.1	U	1.1	U	0.29	J	0.36	J	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	0.55	U	0.54	U	0.31	J	0.5	U	0.47	U	0.5	U	0.47	U	0.5	U	0.47	U	0.46	U	0.46	U
		Perfluorododecanoic acid (PFDoA)	NG/L	U	1.1	U	1.1	U	0.31	J	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	1.1	U	1.1	U	0.92	U	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	0.55	U	0.54	U	0.25	J	0.5	U	0.47	U	0.5	U	0.47	U	0.5	U	0.47	U	0.46	U	0.46	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	U	0.48	U	0.47	U	0.44	J	2.2		0.6	J	3		1.7		2.7		2		0.93	J	0.86	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	U	0.52	U	0.51	U	0.42	J	2.7		0.31	J	3.5		2.1		3.1		3		1.1	J	1.1	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	U	0.52	U	0.51	U	6.8		38		7.8		26		29		39		53		19		19	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	U	0.52	U	0.51	U	0.28	J	1.4	J	0.45	U	0.46	J	0.54	J	1.9		0.96	J	0.35	J	0.35	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	U	0.52	U	0.51	U	6.2		55		8.4		28		34		59		51		21		20	
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	1	U	1	U	0.31	J	0.94	U	0.89	U	0.94	U	0.88	U	0.94	U	0.88	U	0.87	U	0.87	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	0.52	U	0.51	U	0.28	J	0.47	U	0.45	U	0.47	U	0.44	U	0.47	U	0.44	U	0.44	U	0.44	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	1.1	U	1.1	U	0.92	U	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	2.1	U	2	U	1.7	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	U	2.1	U	2	U	1.8	J	2.2	J	1.8	U	0.99	J	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	4.2	U	4.1	U	1.5	J	3.8	U	3.6	U	3.8	U	3.6	U	3.8	U	3.6	U	3.5	U	3.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	U	0.27	U	0.27	U	0.48	J	0.28	UJ	0.16	J	0.39	UJ	0.28	J	0.25	U	0.42	J	0.22	J	0.2	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	1.1	U	1.1	U	0.34	J	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	1.1	U	1.1	U	0.4	J	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	1.1	U	1.1	U	0.92	U	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	1.1	U	1.1	U	0.36	J	1	U	0.95	U	1	U	0.94	U	1	U	0.94	U	0.93	U	0.93	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	U	2.7	U	2.7	U	3.8	J	2.5	U	2.4	U	2.5	U	2.3	U	2.5	U	2.3	U	2.3	U	2.3	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	U	5.5	U	5.4	U	4	J	5	U	4.7	U	5	U	4.7	U	5	U	4.7	U	4.6	U	4.6	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	4.4	U	4.3	U	3.7	U	4	U	3.8	U	4	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	4.2	U	4.1	U	3.5	U	3.8	U	3.6	U	3.8	U	3.6	U	3.8	U	3.6	U	3.5	U	3.5	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	2.2	U	2.1	U	1.8	U	2	U	1.9	U	2	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	0.55	U	0.54	U	0.46	U	0.5	U	0.47	U	0.5	U	0.47	U	0.5	U	0.47	U	0.46	U	0.46	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	66	U	64	U	55	U	60	U	57	U	60	U	56	U	60	U	56	U	56	U	56	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	7.3	U	7.1	U	6.1	U	6.6	U	6.3	U	6.6	U	6.2	U	6.6	U	6.2	U	6.1	U	6.1	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	7.3	U	7.1	U	6.1	U	6.6	U	6.3	U	6.6	U	6.2	U	6.6	U	6.2	U	6.1	U	6.1	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	3.4	U	3.3	U	2.8	U	3.1	U	2.9	U	3.1	U	2.9	U	3.1	U	2.9	U	2.9	U	2.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U	9.7	U	9.5	U	8.1	UJ	8.8	UJ	8.3	UJ	8.8	UJ	8.3	UJ	8.8	UJ	8.3	UJ	8.2	UJ	8.2	UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	34	U	33	U	28	U	31	U	29	U	31	U	29	U	31	U	29	U	29	U	29	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	34	U	33	U	28	U	31	U	29	U	31	U	29	U	31	U	29	U	29	U	29	U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT733	LORNG_BW05006_10122023	Perfluorobutanoic acid (PFBA)	0.67	J	0.67	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.68	J	0.68	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.48	J	0.48	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.3	J	0.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.83	J	0.83	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.24	J	0.24	J	IAG, TR	NG/L
			XHT698	LORNG_BW05010_10122023	Perfluoropentanoic acid (PFPeA)	0.43	J	0.43	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	J	0.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.28	J	0.28	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.78	J	0.78	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.68	J	0.68	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.52	J	0.52	J	TR	NG/L
			XHT699	LORNG_BW06008_10122023	Perfluorobutanoic acid (PFBA)	4	J	4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.56	J	0.56	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.92	J	0.92	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.67	J	0.67	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.19	J	0.19	J	TR	NG/L
			XHT734	LORNG_BW22001_10122023	Perfluorohexanoic acid (PFHxA)	0.31	J	0.31	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.34	J	0.34	J	IAG, TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.17	J	0.17	J	TR	NG/L
			XHT700	LORNG_EBGB_BW001_10122023	Perfluorobutanoic acid (PFBA)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.5	J	1.5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.6	J	0.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.66	J	0.66	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.67	J	0.67	J	TR	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT701	LORNG_EBGB_OW002_10122023	Perfluorobutanoic acid (PFBA)	0.62	J	0.62	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.47	J	0.47	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.26	J	0.26	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.27	J	0.27	J	TR	NG/L
			XHT702	LORNG_JBW7105_10122023	Perfluorobutanoic acid (PFBA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.75	J	0.75	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.9	J	0.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.96	J	0.96	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.58	J	0.58	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TR	NG/L
			XHT703	LORNG_JBW7107_10122023	Perfluorobutanoic acid (PFBA)	0.68	J	0.68	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.94	J	0.94	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.64	J	0.64	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.29	J	0.29	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.44	J	0.44	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.54	J	0.54	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.32	J	0.32	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.84	J	0.84	J	IAG, TR	NG/L
			XHT844	LORNG_JBW7714_10132023	Perfluorobutanesulfonic acid (PFBS)	0.67	J	0.67	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.56	J	0.56	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.18	J	0.18	J	IAG, TR	NG/L
			XHT845	LORNG_JMW-0416B_10132023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.1	J	3.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L

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SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT845	LORNG_JMW-0416B_10132023	Perfluoroheptanoic acid (PFHpA)	0.42	J	0.42	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.78	J	0.78	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.25	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.33	J	0.33	J	TR	NG/L
			XHT735	LORNG_JMW0681_10122023	Perfluorobutanoic acid (PFBA)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.2	J	0.2	J	TR	NG/L
			XHT846	LORNG_JPZ0686_10132023	Perfluorobutanoic acid (PFBA)	2.7	J	2.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.95	J	0.95	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.84	J	0.84	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.59	J	0.59	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.26	J	0.26	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.32	J	0.32	J	TR	NG/L
			XHT736	LORNG_JPZ7808_10122023	Perfluorobutanoic acid (PFBA)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.41	J	0.41	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.57	J	0.57	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.33	J	0.33	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.68	J	0.68	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.54	J	0.54	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.33	J	0.33	J	TR	NG/L
			XHT705	LORNG_MMW0007A_10122023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.77	J	0.77	J	TR	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT737	LORNG_MMW0007A_10122023FD	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.16	J	0.16	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.83	J	0.83	J	TR	NG/L
			XHT738	LORNG_MMW0009_10122023	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.77	J	0.77	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.91	J	0.91	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.52	J	0.52	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.9	J	0.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.8	J	0.8	J	TR	NG/L
			XHT739	LORNG_MMW0015_10122023	Perfluorooctanoic acid (PFOA)	0.13	J	0.13	J	IAG, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.39	J	0.39	J	TR	NG/L
			XHT847	LORNG_MMW0422_10132023	Perfluorobutanoic acid (PFBA)	2	J	2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.99	J	0.99	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.2	J	0.2	J	TR	NG/L
			XHT848	LORNG_MMW0423_10132023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.31	J	0.31	J	TR	NG/L
			XHT849	LORNG_OW16002_10132023	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.86	J	0.86	J	TR	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT706	LORNG_OW16003_10122023	Perfluorobutanoic acid (PFBA)	4.9	J	4.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.46	J	0.46	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.3	J	0.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.55	J	0.55	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.27	J	0.27	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1	J	1	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.1	J	1.1	J	TR	NG/L
			XHT850	LORNG_OW20004_10132023	Perfluorobutanoic acid (PFBA)	1.5	J	1.5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.31	J	0.31	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.38	J	0.38	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.9	J	0.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.73	J	0.73	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.21	J	0.21	J	TR	NG/L
			XHT851	LORNG_OW20004_10132023FD	Perfluorobutanoic acid (PFBA)	1.3	J	1.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.35	J	0.35	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.18	J	0.18	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.53	J	0.53	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.88	J	0.88	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.86	J	0.86	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.27	J	0.27	J	IAG, TR	NG/L
			XHT740	LORNG_OW22001_10122023	Perfluorobutanoic acid (PFBA)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.9	J	0.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.85	J	0.85	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.69	J	0.69	J	TR	NG/L

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W2259	E1633DR	T	XHT740	LORNG_OW22001_10122023	Perfluorobutanesulfonic acid (PFBS)	0.64	J	0.64	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.54	J	0.54	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.39	J	0.39	J	TR	NG/L
			XHT707	LORNG_RFW-38_10122023	Perfluoropentanoic acid (PFPeA)	0.31	J	0.31	J	SNL, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.37	J	0.37	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.63	J	0.63	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.57	J	0.57	J	TR	NG/L
			XHT741	LORNG_UNK-036_10122023	Perfluorohexanoic acid (PFHxA)	0.18	J	0.18	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.16	J	0.16	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.89	J	0.89	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.27	J	0.27	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.3	J	TR	NG/L
			XHT708	LORNG_USMW024_10122023	Perfluorobutanoic acid (PFBA)	0.69	J	0.69	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.15	J	0.15	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.2	J	0.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.89	J	0.89	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.18	J	0.18	J	IAG, TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.45	J	0.45	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	TR	NG/L
			XHT852	LORNG_WBGB_BW001_10132023	Perfluorobutanoic acid (PFBA)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.21	J	0.21	J	TR	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W5453	E1633DR	T	XIK522	LORNG_JBW7203A_10172023	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.79	J	0.79	J	TR	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.93	U	0.93	R	EISL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.47	U	0.47	R	EISL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.61	J	0.61	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.93	U	0.93	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.93	U	0.93	R	EISL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	EISL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.7	U	4.7	R	EISL	NG/L
			XIK523	LORNG_JBW7203B_10172023	Perfluorobutanoic acid (PFBA)	5.6	J	5.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.63	J	0.63	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.62	J	0.62	J	TR	NG/L
			XIK524	LORNG_JMW1762_10172023	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.3	J	0.3	J	TR	NG/L
					Perfluorododecanoic acid (PFDoA)	0.89	U	0.89	UJ	EISL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.89	U	0.89	R	EISL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	R	EISL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.55	J	0.55	J	ISL, IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	23		23	J	ISL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.84	U	0.84	UJ	ISL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	ISL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.89	U	0.89	UJ	ISL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.22	U	0.22	UJ	ISL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.89	U	0.89	R	EISL	NG/L

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W5453	E1633DR	T	XIK524	LORNG_JMW1762_10172023	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.89	U	0.89	R	EISL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.89	U	0.89	UJ	ISL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.89	U	0.89	UJ	ISL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.2	U	2.2	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	R	EISL	NG/L
			XIK526	LORNG_JMW6001_10172023	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.77	J	0.77	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.82	J	0.82	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.26	J	0.26	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	J	1.8	J	TR	NG/L
			XIK525	LORNG_JMW6001_10172023FD	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.78	J	0.78	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.86	J	0.86	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.32	J	0.32	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.2	J	1.2	J	TR	NG/L
			XIK527	LORNG_JPZ0349_10172023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.33	J	0.33	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.89	J	0.89	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.86	J	0.86	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.2	J	0.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.53	J	0.53	J	TR	NG/L

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Checked by: JAR
Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W5493	E1633DR	T	XIK729	LORNG_BB_BW001_10162023	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.98	J	0.98	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.78	J	0.78	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.2	J	0.2	J	TR	NG/L
			XIK766	LORNG_BW14005_10172023	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.32	J	0.32	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.52	J	0.52	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.95	J	0.95	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.46	J	0.46	J	TR	NG/L
			XIK730	LORNG_BW16002_10172023	Perfluorobutanoic acid (PFBA)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.3	J	0.3	J	TR	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	R	EISL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	R	EISL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.96	J	0.96	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	R	EISL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	EISL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	R	EISL	NG/L
			XIK731	LORNG_BW17004_10162023	Perfluorobutanoic acid (PFBA)	2.1	J	2.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.23	J	0.23	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.84	J	0.84	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.78	J	0.78	J	TR	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctane sulfonamide (PFOSA)	0.58	J	0.58	J	TR	NG/L
C3W5493	E1633DR	T	XIK767	LORNG_JBW8009_10172023	Perfluorononanoic acid (PFNA)	0.54	J	0.54	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.31	J	0.31	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.93	J	0.93	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	3.3	J	3.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5.5	J	5.5	J	TR	NG/L
			XIK768	LORNG_JMW-0505_10172023	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.4	J	2.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.16	J	0.16	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.4	J	0.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.79	J	0.79	J	TR	NG/L
			XIK769	LORNG_JMW-0602_10172023	Perfluorononanoic acid (PFNA)	0.37	J	0.37	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.98	J	0.98	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4		2.4	J	FDD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	2	J	2	J	TR	NG/L
			XIK770	LORNG_JMW-0602_10172023FD	Perfluorononanoic acid (PFNA)	0.42	J	0.42	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.97	J	0.97	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.9	J	0.9	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.7		4.7	J	FDD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	J	4.5	J	TR	NG/L
			XIK733	LORNG_JMW0992_10162023	Perfluorobutanoic acid (PFBA)	0.7	J	0.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.26	J	0.26	J	TR	NG/L

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Date: 4/15/24

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Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorohexanoic acid (PFHxA)	0.43	J	0.43	J	TR	NG/L
C3W5493	E1633DR	T	XIK733	LORNG_JMW0992_10162023	Perfluoroheptanoic acid (PFHpA)	0.24	J	0.24	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.19	J	0.19	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.53	J	0.53	J	TR	NG/L
			XIK734	LORNG_JMW7322_10172023	Perfluorononanoic acid (PFNA)	1	J	1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	J	TR	NG/L
			XIK771	LORNG_LF2MW1_10172023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.97	J	0.97	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.97	J	0.97	U	EBL	NG/L
					Perfluorononanoic acid (PFNA)	0.33	J	0.33	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.63	J	0.63	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.6	J	0.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.22	J	0.22	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.58	J	0.58	UJ	EBL, IAG	NG/L
			XIK736	LORNG_LF3MW3_10162023FD	Perfluorooctanoic acid (PFOA)	0.17	J	0.17	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	J	0.23	J	TR	NG/L
			XIK772	LORNG_MMW0132_10172023	Perfluorodecanoic acid (PFDA)	0.34	J	0.34	J	TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.16	J	0.16	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.38	J	0.38	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	2.1	J	2.1	J	TR	NG/L
			XIK777	LORNG_OW10007_10172023	Perfluorobutanoic acid (PFBA)	0.54	J	0.54	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.27	J	0.27	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.5	J	0.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.29	J	0.29	J	TR	NG/L

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 3
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.24	J	0.24	J	TR	NG/L
C3W5493	E1633DR	T	XIK777	LORNG_OW10007_10172023	Perfluorobutanesulfonic acid (PFBS)	0.52	J	0.52	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.17	J	0.17	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.99	J	0.99	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.1	J	3.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.74	J	0.74	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.97	U	0.97	UJ	EISL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	2	J	2	J	TR	NG/L
			XIK737	LORNG_OW20002_10172023	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.48	J	0.48	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.21	J	0.21	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.2	J	2.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	3.6	J	3.6	J	TR	NG/L
			XIK773	LORNG_OW20005_10172023	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.16	J	0.16	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.67	J	0.67	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	4.9	J	4.9	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5.5	J	5.5	J	TR	NG/L
			XIK738	LORNG_SB/OW17001_10162023	Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.3	J	1.3	J	TR	NG/L

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Checked by: JAR
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctane sulfonamide (PFOSA)	0.16	J	0.16	J	TR	NG/L
C3W5493	E1633DR	T	XIK739	LORNG_USMW013_10162023	Perfluorobutanoic acid (PFBA)	0.58	J	0.58	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.41	J	0.41	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.61	J	0.61	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.24	J	0.24	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.55	J	0.55	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.41	J	0.41	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.46	J	0.46	J	TR	NG/L
C3W7599	E1633DR	T	XIW094	LORNG_JBW7347B_10182023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.9	J	2.9	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9		2.9	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.5		3.5	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.41	J	0.41	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.9	J	0.9	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	14		14	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.24	J	0.24	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	14		14	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
C3W7599	E1633DR	T	XIW094	LORNG_JBW7347B_10182023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.3	J	2.3	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.53	J	0.53	UJ	TH8, LBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8	NG/L
			XIW094	LORNG_JBW7347B_10182023	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L

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Checked by: JAR
Date: 4/15/24

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			[illegible]	[illegible]	3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIW095	LORNG_JBW7347B_10182023FD	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.9	J	2.9	NJ	TH8, CFD, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.3		2.3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.5		3.5	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.44	J	0.44	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8	NG/L
C3W7599	E1633DR	T			Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.93	J	0.93	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	14		14	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.24	J	0.24	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	15		15	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.9	U	1.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.2	J	4.2	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.51	J	0.51	UJ	TH8, LBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8	NG/L

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Checked by: JAR
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7599	E1633DR	T	XIW095	LORNG_JBW7347B_10182023FD	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	U	2.5	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.5	U	0.5	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8, CCL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8	NG/L
			XIW096	LORNG_OW21005_10182023	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TH8, HPHL, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.5		3.5	J	TH8, HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	3.7		3.7	J	TH8, HPHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.5		3.5	J	TH8, HPHL	NG/L

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SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7599	E1633DR	T	XIW096	LORNG_OW21005_10182023	Perfluorooctanoic acid (PFOA)	4.6		4.6	J	TH8, HPHL	NG/L
					Perfluorononanoic acid (PFNA)	0.67	J	0.67	J	TH8, HPHL, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8, HPHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8, HPHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.47	J	0.47	J	TH8, HPHL, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.31	J	0.31	J	TH8, HPHL, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	6.2		6.2	J	TH8, HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.17	J	0.17	J	TH8, HPHL, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	7.7		7.7	J	TH8, HPHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8, HPHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8, HPHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8, HPHL	NG/L

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Checked by: JAR
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7599	E1633DR	T	XIW096	LORNG_OW21005_10182023	Perfluorooctane sulfonamide (PFOSA)	0.7	J	0.7	UJ	TH8, HPHL, LBL, FDD	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	UJ	TH8, HPHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	UJ	TH8, HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8, HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8, HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21		21	J	TH8, HPHL, FDD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5	U	5	UJ	TH8, HPHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8, HPHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8, HPHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8, HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8, HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8, HPHL	NG/L
			XIW096	LORNG_OW21005_10182023	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8, HPHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8, HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8, HPHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8, HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8, HPHL	NG/L

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Checked by: JAR
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Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7599	E1633DR	T			3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8, HPHL	NG/L
			XIW097	LORNG_OW21005_10182023FD	Perfluorobutanoic acid (PFBA)	4.4	J	4.4	J	TH8, HPHL, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.7		3.7	J	TH8, HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	3.3		3.3	J	TH8, HPHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.4		3.4	J	TH8, HPHL	NG/L
					Perfluorooctanoic acid (PFOA)	4.5		4.5	J	TH8, HPHL	NG/L
					Perfluorononanoic acid (PFNA)	0.56	J	0.56	J	TH8, HPHL, TR	NG/L
					Perfluorodecanoic acid (PFDA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.5	U	0.5	UJ	TH8, HPHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1	U	1	UJ	TH8, HPHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.5	U	0.5	UJ	TH8, HPHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.52	J	0.52	J	TH8, HPHL, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.32	J	0.32	J	TH8, HPHL, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	6.3		6.3	J	TH8, HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.18	J	0.18	J	TH8, HPHL, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	7.9		7.9	J	TH8, HPHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.94	U	0.94	UJ	TH8, HPHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.47	U	0.47	UJ	TH8, HPHL	NG/L

Prepared by:AKN
Date:4/11/24
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Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7599	E1633DR	T	XIW097	LORNG_OW21005_10182023FD	Perfluorododecanesulfonic acid (PFDoS)	1	U	1	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8, HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.8	U	3.8	UJ	TH8, HPHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.5		3.5	J	TH8, HPHL, FDD	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8, HPHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8, HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1	U	1	UJ	TH8, HPHL	NG/L
C3W7599	E1633DR	T	XIW097	LORNG_OW21005_10182023FD	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1	U	1	UJ	TH8, HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8, HPHL, FDD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8, HPHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4	U	4	UJ	TH8, HPHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.8	U	3.8	UJ	TH8, HPHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8, HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8, HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60	U	60	UJ	TH8, HPHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.6	U	6.6	UJ	TH8, HPHL	NG/L

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Table 3
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Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.6	U	6.6	UJ	TH8, HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.1	U	3.1	UJ	TH8, HPHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	TH8, HPHL, CCL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	31	U	31	UJ	TH8, HPHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	31	U	31	UJ	TH8, HPHL	NG/L

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Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN434	LORNG_043-MW03_10232023	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.21	J	0.21	NJ	CFD, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.4	U	7.4	UJ	CCL	NG/L
			XKN424	LORNG_AA18MW-02_10192023	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.82	J	0.82	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	5.2		5.2	J	PJ, IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.1	U	1.1	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.1	U	1.1	R	EISL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.5	U	9.5	UJ	CCL	NG/L
			XKN425	LORNG_BB_OW001_10232023	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.43	J	0.43	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.82	J	0.82	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.5	U	9.5	UJ	CCL	NG/L
			XKN426	LORNG_BW01006_10202023	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.96	J	0.96	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.84	J	0.84	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.1	U	1.1	UJ	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.1	U	1.1	UJ	EISL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.9	U	9.9	UJ	CCL	NG/L
			XKN401	LORNG_BW13001_10192023	Perfluorohexanoic acid (PFHxA)	1	J	1	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.55	J	0.55	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.78	J	0.78	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.2	J	0.2	J	IAG, TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN401	LORNG_BW13001_10192023	Perfluorobutanesulfonic acid (PFBS)	0.41	J	0.41	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.28	J	0.28	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.2	J	0.2	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.7	U	7.7	UJ	CCL	NG/L
			XKN427	LORNG_BW17005_10202023	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.98	J	0.98	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.1	U	1.1	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.1	U	1.1	R	EISL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.9	U	9.9	UJ	CCL	NG/L
			XKN402	LORNG_BW18009_10192023	Perfluorobutanoic acid (PFBA)	3.4	J	3.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.5		5.5	J-	EISH, IAG	NG/L
					Perfluorohexanoic acid (PFHxA)	0.75	J	0.75	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.46	J	0.46	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.81	J	0.81	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.39	J	0.39	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.39	J	0.39	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.16	J	0.16	J	IAG, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	CCL	NG/L
			XKN403	LORNG_BW18010_10192023	Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	SNL, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.21	J	0.21	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.41	J	0.41	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN403	LORNG_BW18010_10192023	Perfluorohexanesulfonic acid (PFHxS)	0.18	J	0.18	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.32	J	0.32	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.31	J	0.31	J	IAG, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.3	U	8.3	UJ	CCL	NG/L
			XKN404	LORNG_BW20002_10192023	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	10		10	J	IAG, SNL	NG/L
					Perfluorononanoic acid (PFNA)	0.87	J	0.87	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.61	J	0.61	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	J	0.23	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.2	U	8.2	UJ	CCL	NG/L
			XKN405	LORNG_EBGB_BW002_10192023	Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	IAG, SNL, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.47	J	0.47	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.24	J	0.24	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.22	J	0.22	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.22	J	0.22	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.17	J	0.17	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	CCL	NG/L
			XKN406	LORNG_JMW-0806_10192023	Perfluoroheptanoic acid (PFHpA)	0.77	J	0.77	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.51	J	0.51	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.29	J	0.29	J	TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.31	J	0.31	J	TR	NG/L
					Perfluorododecanoic acid (PFDoA)	0.31	J	0.31	J	TR	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.25	J	0.25	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN406	LORNG_JMW-0806_10192023	Perfluorobutanesulfonic acid (PFBS)	0.44	J	0.44	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	J	0.42	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.28	J	0.28	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.31	J	0.31	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.28	J	0.28	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	J	1.8	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.48	J	0.48	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.34	J	0.34	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.4	J	0.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.36	J	0.36	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	3.8	J	3.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4	J	4	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	CCL	NG/L
			XKN431	LORNG_JPZ0606_10202023	Perfluorobutanoic acid (PFBA)	5	J	5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4		4	J	IAG	NG/L
					Perfluorodecanoic acid (PFDA)	0.36	J	0.36	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.2	J	2.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.28	J	0.28	UJ	LBL, IAG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	CCL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN435	LORNG_MMW3402R_10232023	Perfluorobutanoic acid (PFBA)	3.7	J	3.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	J	1.9	J	IAG, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.99	J	0.99	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.6	J	0.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.31	J	0.31	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.16	J	0.16	J	IAG, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.3	U	8.3	UJ	CCL	NG/L
			XKN432	LORNG_OW10005_10202023	Perfluorononanoic acid (PFNA)	0.71	J	0.71	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.46	J	0.46	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.99	J	0.99	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.39	J	0.39	UJ	LBL, IAG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	CCL	NG/L
			XKN407	LORNG_OW17002_10192023	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.54	J	0.54	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.28	J	0.28	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.3	U	8.3	UJ	CCL	NG/L
			XKN433	LORNG_OW20003_10202023	Perfluorobutanoic acid (PFBA)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.45	J	0.45	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.8	U	8.8	UJ	CCL	NG/L
			XKN408	LORNG_OW20007_10192023	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	9.6		9.6	J	IAG	NG/L
					Perfluorononanoic acid (PFNA)	0.87	J	0.87	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.96	J	0.96	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5365	E1633DR	T	XKN408	LORNG_OW20007_10192023	Perfluorooctane sulfonamide (PFOSA)	0.42	J	0.42	J	TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.3	U	8.3	UJ	CCL	NG/L
			XKN409	LORNG_USMW025_10192023	Perfluorobutanoic acid (PFBA)	2	J	2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.8		5.8	NJ	EISH, CFD	NG/L
					Perfluorononanoic acid (PFNA)	0.76	J	0.76	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.93	J	0.93	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.22	J	0.22	J	IAG, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.2	U	8.2	UJ	CCL	NG/L
			XKN410	LORNG_USMW025_10192023FD	Perfluorobutanoic acid (PFBA)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.4		6.4	J	IAG	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.86	J	0.86	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	0.35	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.2	J	0.2	J	IAG, TR	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.2	U	8.2	UJ	CCL	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3W2259-C3X5365

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

NJ = Analyte has been tentatively identified and concentration is estimated

NG/L = nanograms per liter

CCL = Low continuing calibration verification standard recovery

CFD = Confirmation ion not present

EBL = Analyte detected in equipment blank; concentration in sample is less than LOQ

EISH = High extracted internal standard recovery

EISL = Low extracted internal standard recovery

FDD = Imprecision between primary sample and field duplicate results

HPHL = Hold time between collection and extraction exceeded

IAG = Transition ion ratio outside limits

ISL = Low non-extracted internal standard recovery

LBL = Analyte detected in laboratory blank; concentration in sample is less than LOQ

PJ = Potential bile salt interference

SNL = Signal to noise ratio outside criteria

TH8 = Elevated sample receipt temperature

TR = Analyte concentration is less than LOQ

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3W2259	LORNG_MMW0007A_10122023	LORNG_MMW0007A_10122023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.8	J	2.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.8		5.7		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.9		4.8		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.3		2.2		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.6		2.5		4	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.16	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.97	J	1.1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.77	J	0.83	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	8.3		8.4		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	7.6		8.5		11	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	

Prepared by: AKN 4/11/24
Checked by: JAR 4/15/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	
C3W2259	LORNG_OW20004_10132023	LORNG_OW20004_10132023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.5	J	1.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.31	J	0.35	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.5	U	0.18	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.38	J	0.53	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.9	J	0.88	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.73	J	0.86	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	8.4		8.9		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.21	J	0.27	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	8.8		9.7		10	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	
C3W5453	LORNG_JMW6001_10172023	LORNG_JMW6001_10172023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.2	J	5.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.3		3.6		9	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.4		3.7		8	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.2		2.4		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.7		3.2		17	
				Perfluorononanoic acid (PFNA) (NG/L)	0.7	J	0.7	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.9	U	0.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.9	U	0.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.9	U	0.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.77	J	0.78	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.82	J	0.86	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15		15		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.26	J	0.32	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	15		16		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.85	U	0.85	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.42	U	0.42	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.9	U	0.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	U	1.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.8	J	1.2	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.4	U	3.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0	J	0.22	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.9	U	0.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.9	U	0.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.9	U	0.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.9	U	0.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.2	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.5	U	4.5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.6	U	3.6	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.4	U	3.4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.45	U	0.45	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	54	U	54	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6	U	5.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6	U	5.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.8	U	2.8	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8	U	7.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	28	U	28	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	28	U	28	U	NC	
C3W5493	LORNG_JMW-0602_10172023	LORNG_JMW-0602_10172023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12		13		8	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.2		3.3		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.9		8.2		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.4		2.8		15	
				Perfluorooctanoic acid (PFOA) (NG/L)	11		12		9	
				Perfluorononanoic acid (PFNA) (NG/L)	0.37	J	0.42	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.93	U	0.95	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.93	U	0.95	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.93	U	0.95	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1		1.9		10	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.4		2.5		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	42		45		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.98	J	0.97	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	50		53		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.88	U	0.89	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.44	U	0.45	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.93	U	0.95	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.8	U	0.9	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.4	J	4.7	J	65	**FDD**
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.93	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.93	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.93	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.93	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	2	J	4.5	J	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.47	U	0.47	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	56	U	57	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.2	U	6.2	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.2	U	6.2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.9	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.2	U	8.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	29	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	29	U	29	U	NC	
C3W5493	LORNG_LF3MW3_10162023	LORNG_LF3MW3_10162023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.23	U	0.17	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.91	U	0.91	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.91	U	0.91	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.91	U	0.91	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.45	U	0.45	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.4	U	0.4	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.85	U	0.85	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.91	U	0.91	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	U	1.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.7	U	1.7	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.5	U	3.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.23	U	0.23	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.91	U	0.91	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.91	U	0.91	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.91	U	0.91	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.91	U	0.91	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.5	U	4.5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.6	U	3.6	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.45	U	0.45	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	55	U	55	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6	U	6	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6	U	6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.8	U	2.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8	U	8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	28	U	28	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	28	U	28	U	NC	
C3W7599	LORNG_JBW7347B_10182023	LORNG_JBW7347B_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.8	J	2.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.9	J	2.9	NJ	0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.9	J	2.3	J	23	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.5	J	1.5	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.5	J	3.5	J	0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.41	J	0.44	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.97	J	1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.9	J	0.93	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	14	J	14	J	0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.24	J	0.24	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	14	J	15	J	7	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	UJ	1.9	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2.3	J	4.2	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.53	UJ	0.51	UJ	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	UJ	2.5	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	5	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	UJ	2	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	

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SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
C3W7599	LORNG_OW21005_10182023	LORNG_OW21005_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.6	J	4.4	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.5	J	3.7	J	6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.7	J	3.3	J	11	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.5	J	3.4	J	3	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.6	J	4.5	J	2	
				Perfluorononanoic acid (PFNA) (NG/L)	0.67	J	0.56	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	UJ	1	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	UJ	0.5	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.47	J	0.52	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.31	J	0.32	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	6.2	J	6.3	J	2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.17	J	0.18	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	7.7	J	7.9	J	3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	UJ	0.94	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	UJ	0.47	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	UJ	1	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	UJ	1.7	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.7	UJ	1.7	UJ	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.7	UJ	3.5	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	UJ	0.91	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	UJ	0.91	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	UJ	1	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	21	J	2.3	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	UJ	4.6	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	UJ	4	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	UJ	3.8	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	UJ	1.8	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.46	UJ	0.46	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
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SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	UJ	60	UJ	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	UJ	6.6	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	UJ	3.1	UJ	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	UJ	8.8	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	UJ	31	UJ	NC	
C3X5365	LORNG_USMW025_10192023	LORNG_USMW025_10192023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2	J	1.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.8	NJ	6.4	J	10	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3		3.1		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.1		2.1		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.4		3.4		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.76	J	0.7	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.93	U	0.93	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.93	J	0.86	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	19		19		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.35	J	0.35	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	21		20		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.87	U	0.87	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.44	U	0.44	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.93	U	0.93	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.5	U	3.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.22	J	0.2	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.93	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.93	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.93	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.93	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.6	U	4.6	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	

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SDGs C3W2259-C3X5365
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.46	U	0.46	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	56	U	56	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.1	U	6.1	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.1	U	6.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.9	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.2	UJ	8.2	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	29	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	29	U	29	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

FDD = Field duplicate precision goal not met

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

NG/L = nanograms per liter

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

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APRIL 2, 2024

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
Bureau Veritas	Bureau Veritas Canada
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
EtFOSA	ethyl perfluorooctanesulfonamide
EtFOSE	ethyl perfluorooctanesulfonamidoethanol
FTS	fluorotelomer sulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MeFOSA	methyl perfluorooctanesulfonamide
MeFOSE	methyl perfluorooctanesulfonamidoethanol
MS	matrix spike
MSD	matrix spike duplicate
ng/L	nanograms per liter
NIS	non-extracted internal standard
PFAS	per- and polyfluoroalkyl substances
PFBA	perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDS	perfluorodecanesulfonic acid
PFDoDS	perfluorododecanesulfonic acid
PFHpS	perfluoroheptanesulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFNS	perfluorononanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFPeA	perfluoropentanoic acid
PFPeS	perfluoropentanesulfonic acid
PFTrDA	perfluorotridecanoic acid

QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 144 aqueous samples, including 16 equipment blanks and 13 field duplicates, between 19 October and 10 November 2023 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to Bureau Veritas Canada (Bureau Veritas), located in Mississauga, Ontario, Canada, where they were received between 26 October and 11 November 2023 and assigned to job numbers C3X5422, C3X7078, C3Y0329, C3Y0355, C3Y1766, C3Y3189, C3Y3233, C3Y5028, C3Y5043, C3Y8381, C3Y8410, C3Z4686, and C3Z4689. Bureau Veritas analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 2B validation on 100 percent (%) of primary field samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms but does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;

- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EBG	The analyte was detected in the associated equipment blank and the concentration detected in the sample was greater than the limit of quantitation (LOQ).
EBL	The analyte was detected in the associated equipment blank and the concentration detected in the sample was less than the LOQ.
EISH	High EIS recovery.
EISL	Low EIS recovery.
IAG	Transition ion ratio is outside of expected limits.
LBL	The analyte was detected in the associated laboratory blank and the concentration detected in the sample was less than the LOQ.
MSH	High MS recovery.
MSL	Low MS recovery.
SNL	Signal to noise ratio did not meet criteria.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius, with the following exception:

- Bureau Veritas did not sign the second page of the COCs for report numbers C3X7078, C3Y3233, and C3Y5043 but there is a note in the signature line to "see page 1". WSP did not qualify any data based on the missing signatures.
- Bureau Veritas signed the first page of the COC associated with report number C3Z4686, but not the second page. WSP did not qualify any data based on the missing signatures.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

According to the laboratory's notes, the analytical instrument underwent mass calibration to the instrument's manufacturer's specifications and using the manufacturer's recommended standard less than a year before the samples reviewed in this report were analyzed.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory and equipment blanks associated with the samples reviewed in this report, with the following exceptions:

- Perfluorooctanesulfonamide (PFOSA) was detected at a concentration of 0.13 nanograms per liter (ng/L) in the laboratory blank associated with samples LORNG_JBW7710_10202023 and LORNG_JMW1981_10202023. Data limitations are summarized below.
  - WSP U qualified the PFOSA result from sample LORNG_JBW7710_10202023 because the detected concentration was greater than the LOD but less than the LOQ. (U, LBL)
  - PFOSA was not detected in the remaining associated sample and data usability is not adversely affected by the blank detection.
- PFOSA was detected at a concentration of 0.18 ng/L in the laboratory blank associated with samples LORNG_BW13003_10242023, LORNG_BW13003_10242023FD, LORNG_JBW7305_107_10252023, LORNG_JBW7305_33_10252023, LORNG_JMW3102_10242023, and LORNG_JMW3601_10252023. WSP U qualified the PFOSA result from the associated samples because the detected concentrations were greater than the LOD but less than the LOQ. (U, LBL)
- PFOS was detected at a concentration of 0.81 ng/L in equipment blank LORNG_EB013_10242023, associated with samples LORNG_BW13003_10242023, LORNG_BW13003_10242023FD, and LORNG_MMW0004_10242023. Data limitations are summarized below.
  - WSP J+ qualified the PFOS result from sample LORNG_MMW0004_10242023 because the detected concentration was greater than the LOQ and less than five times the concentration detected in the blank. (J+, EBG)
  - PFOS was detected in the remaining associated samples at concentrations greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.
- Perfluorobutanoic acid (PFBA) was detected at a concentration of 0.91 ng/L in equipment blank LORNG_EB018_10262023, associated with sample LORNG_OW17003_10262023. WSP U qualified the PFBA result from the associated sample at the because the detected concentration was greater than the LOD but less than the LOQ. (U, EBL)
- Perfluorooctanoic acid (PFOA) was detected at a concentration of 0.14 ng/L in equipment blank LORNG_EB024_10312023, associated with samples LORNG_BW18008_10312023, LORNG_JBW7339A_10312023, and LORNG_JBW7339B_10312023. PFOA was detected in the associated samples at concentrations greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.

- Ethyl perfluorooctanesulfonamidoethanol (EtFOSE) and methyl perfluorooctanesulfonamidoethanol (MeFOSE) were detected at concentrations of 2.8 ng/L and 2.5 ng/L, respectively, in equipment blank LORNG_EB031_11072023, associated with samples LORNG_UNK-033_11072023. Data limitations are summarized below.
    - WSP U qualified the EtFOSE result from sample LORNG_UNK-033_11072023 at the LOD of 4.7 ng/L because the detected concentration was less than the LOD. (U, EBL)
    - MeFOSE was not detected in the associated sample and data usability is not adversely affected by the blank detection.
- MeFOSE and EtFOSE were detected at concentrations of 2.9 ng/L and 3.7 ng/L, respectively, in the laboratory blank associated with the analysis of samples LORNG_JBW7753A_10272023, LORNG_MMW0011_10272023, LORNG_AA18MW-01_10272023, LORNG_BW07001_10272023, LORNG_BW07002_10272023, LORNG_OW12002_10272023, and LORNG_RFW1147_10272023. EtFOSE and MeFOSE were not detected in the associated samples and data usability is not adversely affected by the blank detections.
- MeFOSE and EtFOSE were detected at concentrations of 2.2 ng/L and 2.9 ng/L, respectively, in the laboratory blank associated with the analysis of samples LORNG_JBW7336A_11012023, LORNG_OW08001_11012023, LORNG_JBW7304_11012023, LORNG_BW05009_11012023, LORNG_BW01005_11012023, LORNG_BW01007_11012023, LORNG_BW07003_11012023, LORNG_BW12005_11012023, LORNG_BW18004_11012023, LORNG_OW02001_11012023, LORNG_OW07002_11012023, and LORNG_JBW8003B_11012023. EtFOSE and MeFOSE were not detected in the associated samples and data usability is not adversely affected by the blank detections.
- PFBA was detected at a concentration of 0.85 ng/L in equipment blank LORNG_EB017_10262023, associated with sample LORNG_FMW3413_10262023. PFBA was detected in the associated sample at a concentration greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.
- MeFOSE was detected at a concentration of 26 ng/L in equipment blank LORNG_EB026_11012023, associated with samples LORNG_ASMW101_11012023, LORNG_BW18004_11012023, and LORNG_JMW1665_11012023. MeFOSE was not detected in the associated samples and data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 2.5 ng/L in equipment blank LORNG_EB027_11022023, associated with samples LORNG_BW06006_11022023, LORNG_JBW7215B_11022023, and LORNG_UNK-TC01_11022023. PFOS was detected in the associated samples at concentrations greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 1.5 ng/L in equipment blank LORNG_EB035_11092023, associated with sample LORNG_JBW7327_265_11092023. PFOS was detected in the associated sample at a concentration greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

Low level LCS (LLCS) and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

Bureau Veritas performed MS and MSD analyses on samples LORNG_BSMW3S_11012023, LORNG_BW07001_10272023, LORNG_JPZ1780_10252023, LORNG_JBW8003B_11012023, LORNG_JBW7215B_11022023, and LORNG_MMW0004_10242023. MS and MSD recoveries were within the QAPP-specified LCS limits and RPDs between MS and MSD results were less than 30%, with the following exceptions:

- Perfluorotridecanoic acid (PFTrDA) and perfluorododecanesulfonic acid (PFDoDS) recoveries were outside limits at 411% and 16%, respectively, in the MSD performed on sample LORNG_OW23001_10232023. Additionally, RPDs were high between MS and MSD results for PFTrDA (115%), perfluorodecanesulfonic acid (PFDS [57%]), PFDoDS (136%), and 3-perfluoroheptylpropanoic acid (62%). Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFDoDS result from sample LORNG_OW23001_10232023 due to potential low analytical bias. (UJ, MSL)
  - PFDS, PFDoDS, and 3-perfluoroheptylpropanoic acid were not detected in the unspiked native sample and data usability is not adversely affected by potential analytical imprecision.
  - PFTrDA was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias or analytical imprecision.
- PFDS (221%, 212%), PFDoDS (220%, 215%), perfluoroheptanesulfonic acid (PFHpS [235%, 234%]), perfluorohexanesulfonic acid (PFHxS [172%, 168%]), perfluorononanesulfonic acid (PFNS [213%, 209%]), and perfluoropentanesulfonic acid (PFPeS [212%, 216%]) recoveries were high in the MS and MSD performed on sample LORNG_JBW8003B_11012023. Data limitations are summarized below.
  - WSP J+ qualified the PFHpS, PFHxS, PFPeS, PFNS results from the associated sample due to potential high analytical bias. (J+, MSH)
  - PFDS and PFDoDS were not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
- PFHpS recovery was high at 159% in the MSD performed on sample LORNG_BSMW3S_11012023. WSP J+ qualified the detected PFHpS result from the associated sample due to potential high analytical bias. (J+, MSH)

7.1.11 DUPLICATE PRECISION

Bureau Veritas performed duplicate analyses on sample LORNG_JMW8011_11022023. RPDs were less than 30%, indicating acceptable analytical precision.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries were within the QAPP-specified 20 to 150% interim limits, with the following exceptions:

- Recoveries of the EISs d_3-methyl perfluorooctanesulfonamide (MeFOSA) and d_5-ethyl perfluorooctanesulfonamide (EtFOSA) were extremely low at 3.6% and 5.3%, respectively, in sample LORNG_RFW1147_10272023. Based on professional judgement, WSP R qualified and rejected the non-detect MeFOSA and EtFOSA results from the associated sample due to extremely low EIS recoveries. (R, EISL)
- Recovery of the EIS d_3-MeFOSA was low at 19% in sample LORNG_JPZ7704_10192023. WSP UJ qualified the non-detect MeFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-4:2 fluorotelomer sulfonic acid (FTS) and $^{13}C_5$-perfluoropentanoic acid (PFPeA) were high at 167% and 214%, respectively, in sample LORNG_JMW3601_10252023. Data limitations are summarized below.
  - WSP J- qualified the detected PFPeA result from the associated sample due to high EIS recovery. (J-, EISH)
  - 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_3$-perfluorobutanesulfonic acid (PFBS) was high at 158% in sample LORNG_BW05009_11012023. WSP J- qualified the detected PFBS result from the associated sample due to high EIS recovery. (J-, EISH)

- Recovery of the EIS $^{13}C_3$-PFBS was high at 155% in sample LORNG_JBW8003B_11012023. WSP J- qualified the detected PFBS result from the associated sample due to high EIS recovery. (J-, EISH)
- Recoveries of the EISs $^{13}C_4$-PFBA (19%), $^{13}C_3$-PFBS (19%), $^{13}C_3$-PFHxS (18%), and $^{13}C_8$-PFOS (12%) were low in sample LORNG_JMW0301C_11022023. WSP J+ qualified the detected and UJ qualified the non-detect PFBA, PFBS, PFDS, PFHxS, PFHpS, PFNS, PFOS, PFDoDS, and PFPeS results from the associated sample due to low EIS recoveries. (J+/UJ, EISL)
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 163% in sample LORNG_LYS05012D_11072023. WSP J- qualified the detected 4:2 FTS result from the associated sample due to high EIS recovery. (J-, EISH)
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 159% in sample LORNG_BW13003_10242023FD. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 165% in sample LORNG_JMW1565_10262023. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 154% in sample LORNG_OW08002_10272023. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 174% in sample LORNG_BSMW3S_11012023. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 300% in sample LORNG_LYS01007S_11072023. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exceptions:

- Recoveries of the NISs $^{13}C_3$-PFBA (263%), $^{13}C_2$-perfluorodecanoic acid (PFDA [245%]), $^{13}C_2$-perfluorohexanoic acid (PFHxA [252%]), $^{13}C_4$-PFOS (226%), $^{13}C_4$-PFOA (245%), $^{13}C_5$-perfluorononanoic acid (PFNA [251%]), and $^{18}O_2$-PFHxS (222%) were high in sample LORNG_JBW7738B_10262023. There are no qualification criteria in the DoD data validation guidelines for high NIS recoveries and WSP did not qualify any data based on the high NIS recoveries.
- Recoveries of the NISs $^{13}C_3$-PFBA (238%), $^{13}C_2$-PFDA (234%), $^{13}C_2$-PFHxA (245%), $^{13}C_4$-PFOS (208%), $^{13}C_4$-PFOA (236%), $^{13}C_5$-PFNA (244%), and $^{18}O_2$-PFHxS (215%) were high in sample LORNG_RFW1147_10272023. There are no qualification criteria in the DoD data validation guidelines for high NIS recoveries and WSP did not qualify any data based on the high NIS recoveries.
- Recoveries of the NIS $^{13}C_3$-PFBA were high in samples LORNG_BW05009_11012023 (236%), LORNG_JBW7304_11012023 (264%), LORNG_JMW3601_10252023 (343%), LORNG_OW02001_11012023 (218%), LORNG_OW07002_11012023 (440%), and LORNG_OW08001_11012023 (283%). There are no qualification criteria in the DoD data validation guidelines for high NIS recoveries and WSP did not qualify any data based on the high NIS recoveries.

7.1.14 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

WSP J qualified the following results because the ion ratios were outside of expected limits according to Bureau Veritas' notes. (J, IAG)

- 8:2 FTS in sample LORNG_JMW0683_10312023;
- PFBS in sample LORNG_JBW7742A_11102023;

- PFDA in samples LORNG_BW06006_11022023 and LORNG_LYS07007S_11072023;
- PFHpS in samples LORNG_FMW3413_10262023 and LORNG_JBW7335A_10312023;
- PFHxA in sample LORNG_BW18004_11012023;
- PFOS in sample LORNG_OW02001_11012023;
- PFOSA in samples LORNG_BW12006_10312023, LORNG_JBW7305_107_1025202, LORNG_JBW7339A_10312023, LORNG_JBW7710_10202023, LORNG_JBW7737B_10312023, LORNG_JPZ0348_10252023, LORNG_JMW1565_10262023, LORNG_LF3MW4_10312023, LORNG_LYS05012D_11072023, and LORNG_OW07002_11012023;
- PFPeA in samples LORNG_BW05009_11012023, LORNG_BW12005_11012023, LORNG_JBW7327_158_11082023, LORNG_JBW7336A_11012023, LORNG_JMW3601_10252023, and LORNG_MMW0004_10242023; and
- PFHxA and PFPeA in sample LORNG_UNK-034_280_1102202.

According to Bureau Veritas' notes, the signal to noise ratio for the PFOSA detections in samples LORNG_BW07001_10272023, LORNG_BW07002_10272023, and LORNG_OW07001_11022023 did not meet method-specified minimum criteria. Per the DoD data validation guidelines, WSP J qualified the PFOSA results from the associated samples because of the low signal to noise ratio. (J, SNL)

Bureau Veritas J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Eurofins' J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with the following samples:

- LORNG_BW13003_10242023 (LORNG_BW13003_10242023FD),
- LORNG_MMW0010_10262023 (LORNG_MMW0010_10262023FD),
- LORNG_BW06007_10262023 (LORNG_BW06007_10262023FD),
- LORNG_OW08002_10272023 (LORNG_OW08002_10272023FD),
- LORNG_OW09001_10262023 (LORNG_OW09001_10262023FD),
- LORNG_AA20MW-02_10312023 (LORNG_AA20MW-02_10312023FD),
- LORNG_JBW7737B_10312023 (LORNG_JBW7737B_10312023FD),
- LORNG_JBW7737A_10312023 (LORNG_JBW7737A_10312023FD),
- LORNG_OW05002_10312023 (LORNG_OW05002_10312023FD),
- LORNG_AA07MW-02_11012023 (LORNG_AA07MW-02_11012023FD),
- LORNG_JBW7327_45_11022023 (LORNG_JBW7327_45_11022023FD),
- LORNG_BW01008_11022023 (LORNG_BW01008_11022023FD), and
- LORNG_OW05003_11022023 (LORNG_OW05003_11022023FD)

Precision between primary and field duplicate results was acceptable, with RPDs less than or equal to 30% or differences between concentrations less than the average LOQ. Detections in the field duplicate pairs are summarized in Table 4.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 5,120 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 2 records (0.04%) due to low EIS recoveries.
- J+: WSP J+ qualified 12 records (0.23%) as being estimated concentrations with a positive bias due to high MS recoveries, low EIS recoveries, and/or detections in the associated equipment blank.
- J-: WSP J- qualified 4 records (0.08%) as estimated concentrations with a negative bias due to high EIS recoveries.
- U: WSP U qualified 7 records (0.14%) as non-detections due to detections in the associated equipment or laboratory blanks.
- J/UJ: WSP J or UJ qualified 365 records (7.1%) due to low EIS or MS recoveries, signal to noise ratios outside of limits, detected concentrations less than the LOQ, and/or transition ion ratios outside of expected limits.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLES

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3X5422	JBW7614	LORNG_JBW7614_10192023	XKN815	10/19/2023	WG	N	40
	JBW7710	LORNG_JBW7710_10202023	XKN817	10/20/2023	WG	N	40
	JMW1981	LORNG_JMW1981_10202023	XKN818	10/20/2023	WG	N	40
	JPZ7704	LORNG_JPZ7704_10192023	XKN816	10/19/2023	WG	N	40
	OW23001	LORNG_OW23001_10232023	XKN819	10/23/2023	WG	N	40
C3X7078	BW13003	LORNG_BW13003_10242023	XKW835	10/24/2023	WG	N	40
		LORNG_BW13003_10242023FD	XKW836	10/24/2023	WG	FD	40
	JBW7305	LORNG_JBW7305_107_10252023	XKW837	10/25/2023	WG	N	40
		LORNG_JBW7305_33_10252023	XKW838	10/25/2023	WG	N	40
	JMW3102	LORNG_JMW3102_10242023	XKW833	10/24/2023	WG	N	40
	JMW3601	LORNG_JMW3601_10252023	XKW840	10/25/2023	WG	N	40
	JPZ0348	LORNG_JPZ0348_10252023	XKW841	10/25/2023	WG	N	40
	JPZ1780	LORNG_JPZ1780_10252023	XKW839	10/25/2023	WG	N	40
	MMW0004	LORNG_MMW0004_10242023	XKW834	10/24/2023	WG	N	40
C3Y0329	AA11MW-01	LORNG_AA11MW-01_10262023	XLQ492	10/26/2023	WG	N	40
	AA18MW-01	LORNG_AA18MW-01_10272023	XLQ504	10/27/2023	WG	N	40
	BW06005	LORNG_BW06005_10262023	XLQ483	10/26/2023	WG	N	40
	BW06007	LORNG_BW06007_10262023	XLQ493	10/26/2023	WG	N	40
		LORNG_BW06007_10262023FD	XLQ494	10/26/2023	WG	FD	40
	BW07001	LORNG_BW07001_10272023	XLQ505	10/27/2023	WG	N	40
	BW07002	LORNG_BW07002_10272023	XLQ506	10/27/2023	WG	N	40
	BW08003	LORNG_BW08003_10262023	XLQ484	10/26/2023	WG	N	40
	FIELDQC	LORNG_EB017_10262023	XLQ495	10/26/2023	WQ	EB	40
		LORNG_EB018_10262023	XLQ496	10/26/2023	WQ	EB	40
	FMW3413	LORNG_FMW3413_10262023	XLQ485	10/26/2023	WG	N	40
	JBW7350	LORNG_JBW7350_10262023	XLQ497	10/26/2023	WG	N	40
	JBW7711	LORNG_JBW7711_10262023	XLQ498	10/26/2023	WG	N	40
	JBW7738A	LORNG_JBW7738A_10262023	XLQ486	10/26/2023	WG	N	40
	JBW7738B	LORNG_JBW7738B_10262023	XLQ487	10/26/2023	WG	N	40
	JBW7753A	LORNG_JBW7753A_10272023	XLQ499	10/27/2023	WG	N	40
	JMW1565	LORNG_JMW1565_10262023	XLQ488	10/26/2023	WG	N	40
	MMW0010	LORNG_MMW0010_10262023	XLQ489	10/26/2023	WG	N	40
		LORNG_MMW0010_10262023FD	XLQ490	10/26/2023	WG	FD	40
	MMW0011	LORNG_MMW0011_10262023TEST	XLQ500	10/26/2023	WG	N	40
		LORNG_MMW0011_10272023	XLQ501	10/27/2023	WG	N	40
	MMW0017	LORNG_MMW0017_10262023	XLQ502	10/26/2023	WG	N	40
	OW12002	LORNG_OW12002_10272023	XLQ507	10/27/2023	WG	N	40
	OW17003	LORNG_OW17003_10262023	XLQ503	10/26/2023	WG	N	40
	RFW1147	LORNG_RFW1147_10272023	XLQ508	10/27/2023	WG	N	40
	UNK-044	LORNG_UNK-044_10262023	XLQ491	10/26/2023	WG	N	40
C3Y0355	JMW1960	LORNG_JMW1960_10262023	XLQ600	10/26/2023	WG	N	40
	OW08002	LORNG_OW08002_10272023	XLQ598	10/27/2023	WG	N	40
		LORNG_OW08002_10272023FD	XLQ599	10/27/2023	WG	FD	40
	OW09001	LORNG_OW09001_10262023	XLQ601	10/26/2023	WG	N	40
		LORNG_OW09001_10262023FD	XLQ602	10/26/2023	WG	FD	40
C3Y1766	JPZ0342	LORNG_JPZ0342_10302023	XLY493	10/30/2023	WG	N	40
C3Y3189	JBW7335A	LORNG_JBW7335A_10312023	XMG133	10/31/2023	WG	N	40
	JBW7335B	LORNG_JBW7335B_10312023	XMG132	10/31/2023	WG	N	40

Prepared by:AKN
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Checked by: JAR
Date: 4/15/24

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
	JEBS-4	LORNG_JEBS-4_10312023	XMG134	10/31/2023	WG	N	40
C3Y3233	AA20MW-02	LORNG_AA20MW-02_10312023	XMG320	10/31/2023	WG	N	40
		LORNG_AA20MW-02_10312023FD	XMG321	10/31/2023	WG	FD	40
	BW12006	LORNG_BW12006_10312023	XMG330	10/31/2023	WG	N	40
	BW18008	LORNG_BW18008_10312023	XMG331	10/31/2023	WG	N	40
	BW20001	LORNG_BW20001_10312023	XMG332	10/31/2023	WG	N	40
	FIELDQC	LORNG_EB022_10312023	XMG333	10/31/2023	WQ	EB	40
		LORNG_EB023_10312023	XMG334	10/31/2023	WQ	EB	40
		LORNG_EB024_10312023	XMG341	10/31/2023	WQ	EB	40
	FMW3410	LORNG_FMW3410_10312023	XMG335	10/31/2023	WG	N	40
	JBW7338B	LORNG_JBW7338B_10312023	XMG336	10/31/2023	WG	N	40
	JBW7339A	LORNG_JBW7339A_10312023	XMG337	10/31/2023	WG	N	40
	JBW7339B	LORNG_JBW7339B_10312023	XMG322	10/31/2023	WG	N	40
	JBW7737A	LORNG_JBW7737A_10312023	XMG323	10/31/2023	WG	N	40
		LORNG_JBW7737A_10312023FD	XMG338	10/31/2023	WG	FD	40
	JBW7737B	LORNG_JBW7737B_10312023	XMG324	10/31/2023	WG	N	40
		LORNG_JBW7737B_10312023FD	XMG325	10/31/2023	WG	FD	40
	JBW7912	LORNG_JBW7912_150_10312023	XMG326	10/31/2023	WG	N	40
		LORNG_JBW7912_46_10312023	XMG327	10/31/2023	WG	N	40
	JMW0683	LORNG_JMW0683_10312023	XMG328	10/31/2023	WG	N	40
	LF3MW4	LORNG_LF3MW4_10312023	XMG329	10/31/2023	WG	N	40
	OW05002	LORNG_OW05002_10312023	XMG339	10/31/2023	WG	N	40
		LORNG_OW05002_10312023FD	XMG340	10/31/2023	WG	FD	40
C3Y5028	BW05009	LORNG_BW05009_11012023	XMP629	11/1/2023	WG	N	40
	JBW7304	LORNG_JBW7304_11012023	XMP628	11/1/2023	WG	N	40
	JBW7336A	LORNG_JBW7336A_11012023	XMP626	11/1/2023	WG	N	40
	OW08001	LORNG_OW08001_11012023	XMP627	11/1/2023	WG	N	40
C3Y5043	AA07MW-02	LORNG_AA07MW-02_11012023	XMP811	11/1/2023	WG	N	40
		LORNG_AA07MW-02_11012023FD	XMP812	11/1/2023	WG	FD	40
	ASMW101	LORNG_ASMW101_11012023	XMP813	11/1/2023	WG	N	40
	BSMW3S	LORNG_BSMW3S_11012023	XMP814	11/1/2023	WG	N	40
	BW01005	LORNG_BW01005_11012023	XMP691	11/1/2023	WG	N	40
	BW01007	LORNG_BW01007_11012023	XMP692	11/1/2023	WG	N	40
	BW07003	LORNG_BW07003_11012023	XMP693	11/1/2023	WG	N	40
	BW12005	LORNG_BW12005_11012023	XMP694	11/1/2023	WG	N	40
	BW18004	LORNG_BW18004_11012023	XMP695	11/1/2023	WG	N	40
	FIELDQC	LORNG_EB025_11012023	XMP701	11/1/2023	WQ	EB	40
		LORNG_EB026_11012023	XMP702	11/1/2023	WQ	EB	40
	JBW8003B	LORNG_JBW8003B_11012023	XMP815	11/1/2023	WG	N	40
	JMW1665	LORNG_JMW1665_11012023	XMP816	11/1/2023	WG	N	40
	OW01004	LORNG_OW01004_11012023	XMP817	11/1/2023	WG	N	40
	OW02001	LORNG_OW02001_11012023	XMP696	11/1/2023	WG	N	40
	OW07002	LORNG_OW07002_11012023	XMP697	11/1/2023	WG	N	40
	OW07003	LORNG_OW07003_11012023	XMP818	11/1/2023	WG	N	40
	RFW1145	LORNG_RFW1145_35_11012023	XMP698	11/1/2023	WG	N	40
		LORNG_RFW1145_75_11012023	XMP699	11/1/2023	WG	N	40
	SB/OW12001	LORNG_SB/OW12001_11012023	XMP700	11/1/2023	WG	N	40

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Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3Y8381	JBW7215B	LORNG_JBW7215B_11022023	XNJ020	11/2/2023	WG	N	40
	JBW7327	LORNG_JBW7327_45_11022023	XNJ022	11/2/2023	WG	N	40
		LORNG_JBW7327_45_11022023FD	XNJ023	11/2/2023	WG	FD	40
	JMW0301C	LORNG_JMW0301C_11022023	XNJ021	11/2/2023	WG	N	40
C3Y8410	AA07MW-01	LORNG_AA07MW-01_11022023	XNJ138	11/2/2023	WG	N	40
	AA11MW-02	LORNG_AA11MW-02_11022023	XNJ175	11/2/2023	WG	N	40
	AA20MW-01	LORNG_AA20MW-01_11022023	XNJ176	11/2/2023	WG	N	40
	BW01008	LORNG_BW01008_11022023	XNJ206	11/2/2023	WG	N	40
		LORNG_BW01008_11022023FD	XNJ207	11/2/2023	WG	FD	40
	BW05007	LORNG_BW05007_11022023	XNJ177	11/2/2023	WG	N	40
	BW05011D	LORNG_BW05011D_11032023	XNJ208	11/3/2023	WG	N	40
	BW05011S	LORNG_BW05011S_11032023	XNJ209	11/3/2023	WG	N	40
	BW06006	LORNG_BW06006_11022023	XNJ178	11/2/2023	WG	N	40
	FIELDQC	LORNG_EB027_11022023	XNJ210	11/2/2023	WQ	EB	40
		LORNG_EB028_11022023	XNJ211	11/2/2023	WQ	EB	40
		LORNG_EB029_11032023	XNJ212	11/3/2023	WQ	EB	40
		LORNG_EB030_11032023	XNJ213	11/3/2023	WQ	EB	40
	JBW8004B	LORNG_JBW8004B_11022023	XNJ139	11/2/2023	WG	N	40
	JMW0682	LORNG_JMW0682_11032023	XNJ214	11/3/2023	WG	N	40
	JMW1982	LORNG_JMW1982_11022023	XNJ179	11/2/2023	WG	N	40
	JMW8011	LORNG_JMW8011_11022023	XNJ180	11/2/2023	WG	N	40
	MMW0330	LORNG_MMW0330_11032023	XNJ215	11/3/2023	WG	N	40
	MMW8015	LORNG_MMW8015_11022023	XNJ140	11/2/2023	WG	N	40
	OW01002	LORNG_OW01002_11022023	XNJ141	11/2/2023	WG	N	40
	OW05003	LORNG_OW05003_11022023	XNJ142	11/2/2023	WG	N	40
		LORNG_OW05003_11022023FD	XNJ143	11/2/2023	WG	FD	40
	OW07001	LORNG_OW07001_11022023	XNJ181	11/2/2023	WG	N	40
	UNK-034	LORNG_UNK-034_180_11022023	XNJ182	11/2/2023	WG	N	40
		LORNG_UNK-034_280_11022023	XNJ183	11/2/2023	WG	N	40
		LORNG_UNK-034_80_11022023	XNJ144	11/2/2023	WG	N	40
	UNK-TC01	LORNG_UNK-TC01_11022023	XNJ145	11/2/2023	WG	N	40
C3Z4686	FIELDQC	LORNG_EB031_11072023	XOP726	11/7/2023	WQ	EB	40
		LORNG_EB032_11082023	XOP737	11/8/2023	WQ	EB	40
		LORNG_EB033_11082023	XOP738	11/8/2023	WQ	EB	40
		LORNG_EB034_11092023	XOP739	11/9/2023	WQ	EB	40
		LORNG_EB035_11092023	XOP740	11/9/2023	WQ	EB	40
	GC_BW002D	LORNG_GC_BW002D_11082023	XOP727	11/8/2023	WG	N	40
	LYS01007D	LORNG_LYS01007D_11072023	XOP728	11/7/2023	WI	N	40
	LYS01007S	LORNG_LYS01007S_11072023	XOP729	11/7/2023	WI	N	40
	LYS05012D	LORNG_LYS05012D_11072023	XOP730	11/7/2023	WI	N	40
	LYS05012S	LORNG_LYS05012S_11072023	XOP731	11/7/2023	WI	N	40
	LYS07007D	LORNG_LYS07007D_11062023	XOP732	11/6/2023	WI	N	40
	LYS07007DDUP	LORNG_LYS07007DDUP_11062023	XOP733	11/6/2023	WI	N	40
	LYS07007S	LORNG_LYS07007S_11072023	XOP734	11/7/2023	WI	N	40
	LYS07007SDUP	LORNG_LYS07007SDUP_11072023	XOP735	11/7/2023	WI	N	40
	UNK-033	LORNG_UNK-033_11072023	XOP736	11/7/2023	WG	N	40

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Checked by: JAR
Date: 4/15/24

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3Z4689	JBW7327	LORNG_JBW7327_158_11082023	XOP819	11/8/2023	WG	N	40
		LORNG_JBW7327_265_11092023	XOP817	11/9/2023	WG	N	40
	JBW7742A	LORNG_JBW7742A_11102023	XOP818	11/10/2023	WG	N	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

				SDG	C3X5422					C3X7078								
				Location	JBW7614	JBW7710	JMW1981	JPZ7704	OW23001	BW13003		JBW7305		JMW3102	JMW3601	JPZ0348	JPZ1780	MMW0004
				Sample Date	10/19/2023	10/20/2023	10/20/2023	10/19/2023	10/23/2023	10/24/2023		10/25/2023		10/24/2023	10/25/2023	10/25/2023	10/25/2023	10/24/2023
				Sample ID	LORNG_JBW7614_10192023	LORNG_JBW7710_10202023	LORNG_JMW1981_10202023	LORNG_JPZ7704_10192023	LORNG_OW23001_10232023	LORNG_BW13003_10242023	LORNG_BW13003_10242023FD	LORNG_JBW7305_33_10252023	LORNG_JBW7305_107_10252023	LORNG_JMW3102_10242023	LORNG_JMW3601_10252023	LORNG_JPZ0348_10252023	LORNG_JPZ1780_10252023	LORNG_MMW0004_10242023
				QC Code	N	N	N	N	N	N	FD	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.2 J	4.3 J	5 J	6.6 J	5.4 J	6.3 J	5.8 J	8.1	8.4	22	2.1 J	7.7	5.3 J	3.6 J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.1 J	11	9.8	14	11	16	16	21	21	59	4.6 J-	19	8.7	4.1 J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.6 J	11	7.2	11	8	15	15	14	13	41	2.5	26	10	3.2
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.84 J	4.7	4.5	4.5	5.6	19	19	8.6	8.5	1.7	1.9	10	6.2	0.9 J
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	9.8	5.3	7.4	6	19	19	11	11	3.1	6.1	28	11	1.7
		Perfluorononanoic acid (PFNA)	NG/L	0.21 J	0.61 J	0.51 J	0.24 J	0.75 J	2.6	2.7	1.3 J	1.3 J	0.51 U	0.36 J	1.2 J	0.73 J	0.47 U
		Perfluorodecanoic acid (PFDA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	0.43 J	0.46 J	1 U	1 U	0.95 U	0.98 U	0.93 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.54 U	0.5 U	0.5 U	0.55 U	0.44 U	0.52 U	0.52 U	0.53 U	0.51 U	0.51 U	0.52 U	0.48 U	0.49 U	0.47 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.54 U	0.5 U	0.5 U	0.55 U	0.44 U	0.52 U	0.52 U	0.53 U	0.51 U	0.51 U	0.52 U	0.48 U	0.49 U	0.47 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.56 J	2.7	2.6	2.2	2.2	3	3	3.5	3.4	1.6	0.75 J	4.1	2.4	0.41 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.4 J	3.5	2.8	2.6	2.8	3.4	3.5	5.2	5.5	0.48 U	0.8 J	5	3.2	0.28 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.1	45	28	31	27	26	27	49	50	1.2 J	7.5	160	69	2.4
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.51 U	0.88 J	0.65 J	0.49 J	0.49 J	0.91 J	0.86 J	0.99 J	1 J	0.48 U	0.18 J	1.3 J	0.67 J	0.44 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	7.1	47	34	22	32	48	48	53	54	0.32 J	8.4	93	44	2.1 J+
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	0.94 U	0.94 U	1 U	0.82 U	0.98 U	0.98 U	1 U	0.97 U	0.96 U	0.98 U	0.9 U	0.92 U	0.88 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.51 U	0.47 U	0.47 U	0.52 U	0.41 U	0.49 U	0.49 U	0.5 U	0.48 U	0.48 U	0.49 U	0.45 U	0.46 U	0.44 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 UJ	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	2.1 U	1.9 U	1.9 U	2.1 U	1.7 U	2 U	2 U	2 U	2 U	1.9 U	2 U	1.8 U	1.9 U	1.8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	2.1 U	2.4 J	1.9 U	2.1 U	1.7 U	2 U	2 U	2 U	2 U	1.9 U	2 U	1.8 U	1.9 U	8.1
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.1 U	3.8 U	3.8 U	4.2 U	3.3 U	4 U	4 U	4.1 U	3.9 U	3.9 U	4 U	3.6 U	3.7 U	3.5 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.27 U	0.43 UJ	0.25 U	0.28 U	0.12 J	0.31 U	0.3 U	0.19 U	0.15 UJ	0.21 U	0.17 U	2.8 J	0.48 J	0.2 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.1 U	1 U	1 U	1.1 UJ	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1.1 U	1 U	1 U	1.1 U	0.87 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.95 U	0.98 U	0.93 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.7 U	2.5 U	2.5 U	2.8 U	2.2 U	2.6 U	2.6 U	2.7 U	2.6 U	2.6 U	2.6 U	2.4 U	2.4 U	2.3 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5.4 U	5 U	5 U	5.5 U	4.4 U	5.2 U	5.2 U	5.3 U	5.1 U	5.1 U	5.2 U	4.8 U	4.9 U	4.7 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4.3 U	4 U	4 U	4.4 U	3.5 U	4.2 U	4.2 U	4.3 U	4.1 U	4.1 U	4.2 U	3.8 U	3.9 U	3.7 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1 U	3.8 U	3.8 U	4.2 U	3.3 U	4 U	4 U	4.1 U	3.9 U	3.9 U	4 U	3.6 U	3.7 U	3.5 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2 U	2 U	2 U	2.2 U	1.7 U	2.1 U	2.1 U	2.1 U	2.1 U	2 U	2.1 U	1.9 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.54 U	0.5 U	0.5 U	0.55 U	0.44 U	0.52 U	0.52 U	0.53 U	0.51 U	0.51 U	0.52 U	0.48 U	0.49 U	0.5 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	65 U	60 U	60 U	66 U	52 U	63 U	63 U	64 U	62 U	61 U	62 U	57 U	59 U	56 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	7.2 U	6.6 U	6.6 U	7.3 U	5.8 U	6.9 U	6.9 U	7 U	6.8 U	6.8 U	6.9 U	6.3 U	6.4 U	6.1 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	7.2 U	6.6 U	6.6 U	7.3 U	5.8 U	6.9 U	6.9 U	7 U	6.8 U	6.8 U	6.9 U	6.3 U	6.4 U	6.1 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.4 U	3.1 U	3.1 U	3.4 U	2.7 U	3.2 U	3.2 U	3.3 U	3.2 U	3.2 U	3.2 U	3 U	3 U	2.9 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.5 U	8.8 U	8.8 U	9.7 U	7.7 U	9.2 U	9.2 U	9.4 U	9 U	9 U	9.1 U	8.4 U	8.6 U	8.7 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	34 U	31 U	31 U	34 U	27 U	32 U	32 U	33 U	32 U	32 U	32 U	30 U	30 U	29 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	34 U	31 U	31 U	34 U	27 U	32 U	32 U	33 U	32 U	32 U	32 U	30 U	30 U	29 U

Notes:
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Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

			SDG	C3X5422										C3X7078																			
			Location	JBW7614		JBW7710		JMW1981		JPZ7704		OW23001		BW13003				JBW7305				JMW3102		JMW3601		JPZ0348		JPZ1780		MMW0004			
			Sample Date	10/19/2023		10/20/2023		10/20/2023		10/19/2023		10/23/2023		10/24/2023				10/25/2023				10/24/2023		10/25/2023		10/25/2023		10/25/2023		10/24/2023			
			Sample ID	LORNG_JBW7614_10192023		LORNG_JBW7710_10202023		LORNG_JMW1981_10202023		LORNG_JPZ7704_10192023		LORNG_OW23001_10232023		LORNG_BW13003_10242023		LORNG_BW13003_10242023FD		LORNG_JBW7305_33_10252023		LORNG_JBW7305_107_10252023		LORNG_JMW3102_10242023		LORNG_JMW3601_10252023		LORNG_JPZ0348_10252023		LORNG_JPZ1780_10252023		LORNG_MMW0004_10242023			
			QC Code	N		N		N		N		N		N		FD		N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

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Data Usability Summary Report
Loring PFAS RI
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SDGs C3X5422-C3Z4689

| | | |

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Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

				SDG	C3Y0329											
				Location	JBW7738B	JBW7753A	JMW1565	MMW0010		MMW0011		MMW0017	OW12002	OW17003	RFW1147	UNK-044
				Sample Date	10/26/2023	10/27/2023	10/26/2023	10/26/2023		10/26/2023	10/27/2023	10/26/2023	10/27/2023	10/26/2023	10/27/2023	10/26/2023
				Sample ID	LORNG_JBW7738B_10262023	LORNG_JBW7753A_10272023	LORNG_JMW1565_10262023	LORNG_MMW0010_10262023	LORNG_MMW0010_10262023FD	LORNG_MMW0011_10262023TEST	LORNG_MMW0011_10272023	LORNG_MMW0017_10262023	LORNG_OW12002_10272023	LORNG_OW17003_10262023	LORNG_RFW1147_10272023	LORNG_UNK-044_10262023
				QC Code	N	N	N	N	FD	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	11	8.1	29	8.7	8.7	8.1	7.2	8.2	10	4.5 U	13	3.9 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	25	15	85	19	19	19	17	19	27	1.8 J	27	3.5	
		Perfluorohexanoic acid (PFHxA)	NG/L	37	19	78	20	19	22	19	23	23	1.3 J	30	32	
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.2	15	56	11	12	11	10	12	15	0.3 J	18	5.3	
		Perfluorooctanoic acid (PFOA)	NG/L	13	20	75	15	15	16	15	18	17	0.57 J	31	49	
		Perfluorononanoic acid (PFNA)	NG/L	0.45 J	2.2	13	1.4 J	1.2 J	1.4 J	1.4 J	1.4 J	2.4	0.51 U	4	1.2 J	
		Perfluorodecanoic acid (PFDA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	0.46 J	1 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.53 U	0.5 U	0.52 U	0.52 U	0.51 U	0.48 U	0.51 U	0.49 U	0.52 U	0.51 U	0.51 U	0.52 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 U	1 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 U	1 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.53 U	0.5 U	0.52 U	0.52 U	0.51 U	0.48 U	0.51 U	0.49 U	0.52 U	0.51 U	0.51 U	0.52 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	18	5.9	6.3	3.9	3.7	4	3.5	4.1	6.8	0.97 J	5.9	2.2	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	19	8.2	7.4	4.1	4.4	4	3.9	4.9	11	0.34 J	10	2.7	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	110	91	120	64	65	64	58	78	120	1.7	230	170	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	4.4	3.7	1.7	1.3 J	1.4 J	1.4 J	1 J	1.7	6.7	0.48 U	3.7	1.2 J	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	200	280	69	82	85	92	92	100	470	0.48 U	270	35	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1 U	0.95 U	0.98 U	0.97 U	0.95 U	0.9 U	0.96 U	0.92 U	0.98 U	0.95 U	0.95 U	0.98 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.5 U	0.47 U	0.49 U	0.49 U	0.48 U	0.45 U	0.48 U	0.46 U	0.49 U	0.48 U	0.48 U	0.49 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 U	1 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	2 U	1.9 U	2 U	2 U	1.9 U	1.8 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	2 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	2 U	3.4 J	4.9 J	2 U	1.9 U	1.8 U	1.9 U	1.9 U	19	1.9 U	2.3 J	2 U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.1 U	1.5 J	4 U	3.9 U	3.9 U	3.7 U	3.9 U	3.7 U	1.2 J	3.9 U	3.8 U	4 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.27 U	1.5 J	0.39 J	0.9 J	0.84 J	0.78 J	1.5 J	0.83 J	0.42 J	0.25 U	11	0.26 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 R	1 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 R	1 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 U	1 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1.1 U	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	1 U	1 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.7 U	2.5 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 U	2.4 U	2.6 U	2.5 J	2.5 U	2.6 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5.3 U	5 U	5.2 U	5.2 U	5.1 U	4.8 U	5.1 U	4.9 U	5.2 U	3.3 J	5.1 U	5.2 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4.3 U	4 U	4.2 U	4.1 U	4.1 U	3.8 U	4.1 U	3.9 U	4.2 U	4.1 U	4 U	4.2 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1 U	3.8 U	4 U	3.9 U	3.9 U	3.7 U	3.9 U	3.7 U	4 U	3.9 U	3.8 U	4 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1 U	2 U	2.1 U	2.1 U	2 U	1.9 U	2 U	2 U	2.1 U	2 U	2 U	2.1 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.53 U	0.5 U	0.52 U	0.52 U	0.51 U	0.48 U	0.51 U	0.49 U	0.52 U	0.51 U	0.51 U	0.52 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	64 U	60 U	62 U	62 U	61 U	58 U	61 U	59 U	63 U	61 U	61 U	62 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	7 U	6.7 U	6.9 U	6.8 U	6.7 U	6.3 U	6.7 U	6.4 U	6.9 U	6.7 U	6.7 U	6.9 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	7 U	6.7 U	6.9 U	6.8 U	6.7 U	6.3 U	6.7 U	6.4 U	6.9 U	6.7 U	6.7 U	6.9 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.3 U	3.1 U	3.2 U	3.2 U	3.1 U	3 U	3.2 U	3 U	3.2 U	3.1 U	3.1 U	3.2 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4 U	8.9 U	9.2 U	9.1 U	8.9 U	8.5 U	9 U	8.6 U	9.2 U	8.9 U	8.9 U	9.2 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	33 U	31 U	32 U	32 U	31 U	30 U	32 U	30 U	32 U	31 U	31 U	32 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	33 U	31 U	32 U	32 U	31 U	30 U	32 U	30 U	32 U	31 U	31 U	32 U	

Notes:
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Date: 4/15/24

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Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

				SDG	C3Y0329																	
				Location	JBW7738B		JBW7753A		JMW1565		MMW0010				MMW0011		MMW0017		OW12002		OW17003		RFW1147		UNK-044	
				Sample Date	10/26/2023		10/27/2023		10/26/2023		10/26/2023				10/26/2023		10/27/2023		10/26/2023		10/27/2023		10/26/2023		10/26/2023	
				Sample ID	LORNG_JBW7738B_10262023		LORNG_JBW7753A_10272023		LORNG_JMW1565_10262023		LORNG_MMW0010_10262023		LORNG_MMW0010_10262023FD		LORNG_MMW0011_10262023TEST		LORNG_MMW0011_10272023		LORNG_MMW0017_10262023		LORNG_OW12002_10272023		LORNG_OW17003_10262023		LORNG_RFW1147_10272023		LORNG_UNK-044_10262023	
				QC Code	N		N		N		N		FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

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NG/L = nanograms per liter

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Data Usability Summary Report
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Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

		SDG		C3Y0355					C3Y1766	C3Y3189			C3Y3233					
		Location		JMW1960	OW08002		OW09001		JPZ0342	JBW7335A	JBW7335B	JEBS-4	AA20MW-02		BW12006	BW18008	BW20001	
		Sample Date		10/26/2023	10/27/2023		10/26/2023		10/30/2023	10/31/2023	10/31/2023	10/31/2023	10/31/2023		10/31/2023	10/31/2023	10/31/2023	
		Sample ID		LORNG_JMW1960_10262023	LORNG_OW08002_10272023	LORNG_OW08002_10272023FD	LORNG_OW09001_10262023	LORNG_OW09001_10262023FD	LORNG_JPZ0342_10302023	LORNG_JBW7335A_10312023	LORNG_JBW7335B_10312023	LORNG_JEBS-4_10312023	LORNG_AA20MW-02_10312023	LORNG_AA20MW-02_10312023FD	LORNG_BW12006_10312023	LORNG_BW18008_10312023	LORNG_BW20001_10312023	LORNG_E3120
		QC Code		N	N	FD	N	FD	N	N	N	N	N	FD	N	N	N	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	7.4	22	22	7.7	7.9	23	8	6.7	2.2 J	17	17	16	1.7 J	11	1.8
		Perfluoropentanoic acid (PFPeA)	NG/L	14	72	70	14	16	75	13	12	1.4 J	31	30	47	0.63 J	24	0.46
		Perfluorohexanoic acid (PFHxA)	NG/L	17	81	81	21	24	90	9.9	9.1	1.6	110	110	59	0.73 J	22	0.46
		Perfluoroheptanoic acid (PFHpA)	NG/L	8.3	30	29	7.7	8.8	31	7.3	6.9	2.3	22	21	23	0.52 J	22	0.46
		Perfluorooctanoic acid (PFOA)	NG/L	17	82	84	21	23	97	7.4	7.7	4.7	49	49	31	1.5	25	0.23
		Perfluorononanoic acid (PFNA)	NG/L	1.3 J	3.5	3.3	1.1 J	1.1 J	3.5	0.7 J	0.72 J	1.4 J	0.83 J	0.95 J	2.3	0.17 J	2.3	0.46
		Perfluorodecanoic acid (PFDA)	NG/L	1 U	0.32 J	0.37 J	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.51 U	0.46 U	0.46 U	0.49 U	0.48 U	0.46 U	0.47 U	0.46 U	0.47 U	0.48 U	0.48 U	0.49 U	0.45 U	0.49 U	0.46
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.51 U	0.46 U	0.46 U	0.49 U	0.48 U	0.46 U	0.47 U	0.46 U	0.47 U	0.48 U	0.48 U	0.49 U	0.45 U	0.49 U	0.46
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4	12	13	3.3	3.7	15	2.3	2.1	0.84 J	130	130	23	0.36 J	4.2	0.41
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.4	18	17	4	4.4	19	2.5	1.9	0.62 J	150	170	29	0.42 U	5.4	0.43
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	57	360	330	150	140	320	32	27	11	970	1200	240	7.8	120	0.43
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7	4.8	4.3	1.4 J	1.4 J	4.9	0.39 J	0.43 J	0.27 J	12	13	14	0.42 U	1.9	0.43
		Perfluorooctanesulfonic acid (PFOS)	NG/L	140	230	260	65	76	250	25	26	18	300	260	780	11	120	0.43
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.95 U	0.86 U	0.86 U	0.91 U	0.91 U	0.87 U	0.88 U	0.87 U	0.88 U	0.9 U	0.91 U	0.92 U	0.84 U	0.91 U	0.87
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.48 U	0.43 U	0.43 U	0.46 U	0.45 U	0.44 U	0.44 U	0.44 U	0.44 U	0.45 U	0.46 U	0.46 U	0.42 U	0.46 U	0.43
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U	1.7 U	1.7 U	1.8 U	1.8 U	0.66 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.4 J	1.7 U	1.8 U	1.8
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.1 J	7.5	9.2	1.8 U	1.8 U	37	1.8 U	1.8 U	1.8 U	1.6 J	1.7 J	59	1.7 U	4 J	1.8
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	6.7	3.5 U	3.5 U	3.7 U	3.7 U	2.5 J	3.5 U	3.5 U	3.6 U	3.6 U	3.7 U	2.4 J	3.4 U	4.9 J	3.5
		Perfluorooctane sulfonamide (PFOSA)	NG/L	5.6	7.4	6.9	1.7	1.8	7	0.23 U	0.23 U	0.23 U	0.24 U	0.24 U	0.34 J	0.22 U	1.8	0.23
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U	0.92 U	0.92 U	0.97 U	0.96 U	0.93 U	0.93 U	0.93 U	0.94 U	0.96 U	0.97 U	0.98 U	0.9 U	0.97 U	0.92
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U	2.3 U	2.7 J	2.4 U	2.4 U	2.3 U	2.3 U	2.3 U	2.3 U	2.4 U	2.4 U	2.4 U	2.2 U	2.4 U	2.3
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5.1 U	4.6 U	3.6 J	4.9 U	4.8 U	4.6 U	4.7 U	4.6 U	4.7 U	4.8 U	4.8 U	4.9 U	4.5 U	4.9 U	4.6
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4.1 U	3.7 U	3.7 U	3.9 U	3.9 U	3.7 U	3.7 U	3.7 U	3.8 U	3.8 U	3.9 U	3.9 U	3.6 U	3.9 U	3.7
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9 U	3.5 U	3.5 U	3.7 U	3.7 U	3.5 U	3.5 U	3.5 U	3.6 U	3.6 U	3.7 U	3.7 U	3.4 U	3.7 U	3.5
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.8 U	1.9 U	1.8
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.51 U	0.46 U	0.46 U	0.49 U	0.48 U	0.46 U	0.47 U	0.46 U	0.47 U	0.48 U	0.48 U	0.49 U	0.45 U	0.49 U	0.46
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	61 U	55 U	55 U	58 U	58 U	56 U	56 U	56 U	56 U	58 U	58 U	59 U	54 U	58 U	55
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.7 U	6.1 U	6.1 U	6.4 U	6.4 U	6.1 U	6.1 U	6.1 U	6.2 U	6.3 U	6.4 U	6.4 U	5.9 U	6.4 U	6.1
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.7 U	6.1 U	6.1 U	6.4 U	6.4 U	6.1 U	6.1 U	6.1 U	6.2 U	6.3 U	6.4 U	6.4 U	5.9 U	6.4 U	6.1
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U	2.8 U	2.8 U	3 U	3 U	2.9 U	2.9 U	2.9 U	2.9 U	3 U	3 U	3 U	2.8 U	3 U	2.9
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.9 U	8.1 U	8.1 U	8.6 U	8.5 U	8.2 U	8.2 U	8.2 U	8.3 U	8.4 U	8.5 U	8.6 U	7.9 U	8.5 U	8.1
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	28 U	28 U	30 U	30 U	29 U	29 U	29 U	29 U	30 U	30 U	30 U	28 U	30 U	29
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	28 U	28 U	30 U	30 U	29 U	29 U	29 U	29 U	30 U	30 U	30 U	28 U	30 U	29

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

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Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

SDG				C3Y3233																																
Location				FIELDQC				FMW3410		JBW7338B		JBW7339A		JBW7339B		JBW7737A				JBW7737B				JBW7912				JMW0683		LF3MW4						
Sample Date				10/31/2023				10/31/2023		10/31/2023		10/31/2023		10/31/2023		10/31/2023				10/31/2023				10/31/2023				10/31/2023		10/31/2023						
Sample ID				3022_1023		LORNG_EB023_10312023		LORNG_EB024_10312023		LORNG_FMW3410_10312023		LORNG_JBW7338B_10312023		LORNG_JBW7339A_10312023		LORNG_JBW7339B_10312023		LORNG_JBW7737A_10312023		LORNG_JBW7737A_10312023FD		LORNG_JBW7737B_10312023		LORNG_JBW7737B_10312023FD		LORNG_JBW7912_46_10312023		LORNG_JBW7912_150_10312023		LORNG_JMW0683_10312023		LORNG_LF3MW4_10312023				
QC Code						EB		EB		N		N		N		N		N		FD		N		FD		N		N		N		N				
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Loring PFAS RI
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SDGs C3X5422-C3Z4689

			SDG	C3Y3233		C3Y5028				C3Y5043															
			Location	OW05002		BW05009	JBW7304	JBW7336A	OW08001	AA07MW-02		ASMW101	BSMW3S	BW01005	BW01007	BW07003	BW12005	BW18							
			Sample Date	10/31/2023		11/1/2023	11/1/2023	11/1/2023	11/1/2023	11/1/2023		11/1/2023	11/1/2023	11/1/2023	11/1/2023	11/1/2023	11/1/2023	11/1/2							
			Sample ID	LORNG_OW05002_10312023	LORNG_OW05002_10312023FD	LORNG_BW05009_11012023	LORNG_JBW7304_11012023	LORNG_JBW7336A_11012023	LORNG_OW08001_11012023	LORNG_AA07MW-02_11012023	LORNG_AA07MW-02_11012023FD	LORNG_ASMW101_11012023	LORNG_BSMW3S_11012023	LORNG_BW01005_11012023	LORNG_BW01007_11012023	LORNG_BW07003_11012023	LORNG_BW12005_11012023	LORNG_B_1101							
			QC Code	N	FD	N	N	N	N	N	FD	N	N	N	N	N	N	N							
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	29	31	150	7.4	14	28	76	77	6.6	32	2.8 J	27	110	64 J	2.1							
		Perfluoropentanoic acid (PFPeA)	NG/L	110	110	430 J	22	8.2 J	98	280	280	12	60	66	80	420	140 J	0.52							
		Perfluorohexanoic acid (PFHxA)	NG/L	100	100	270	12	5.4	100	330	330	12	61	66	110	340	360	1.5							
		Perfluoroheptanoic acid (PFHpA)	NG/L	57	61	160	8.8	4.2	38	110	110	7.8	47	29	38	160	60	0.52							
		Perfluorooctanoic acid (PFOA)	NG/L	100	110	160	6.6	5.2	110	390	400	7.8	100	87	120	300	130	0.26							
		Perfluorononanoic acid (PFNA)	NG/L	21	22	31	0.64 J	0.57 J	4.7	16	15	1.4 J	17	5.3	6	38	1.7 J	0.52							
		Perfluorodecanoic acid (PFDA)	NG/L	0.94 U	0.3 J	0.96 J	1 U	1 U	0.36 J	9 U	9.3 U	0.96 U	1.1 J	0.36 J	0.35 J	10 U	10 U	1							
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.47 U	0.47 U	0.52 U	0.51 U	0.51 U	0.51 U	4.5 U	4.7 U	0.48 U	0.49 U	0.51 U	0.54 U	5.2 U	5.1 U	0.52							
		Perfluorododecanoic acid (PFDoA)	NG/L	0.94 U	0.93 U	1 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.94 U	0.93 U	1 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.47 U	0.47 U	0.52 U	0.51 U	0.51 U	0.51 U	4.5 U	4.7 U	0.48 U	0.49 U	0.51 U	0.54 U	5.2 U	5.1 U	0.52							
		Perfluorobutanesulfonic acid (PFBS)	NG/L	57	56	84 J-	2.6	1.5	16	61	62	2.5	15	11	12	95	150	0.45							
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	100	98	98	2.7	1.8	32	82	88	2.8	20	26	30	160	180	0.49							
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	750	730	730	23	33	420	1500	1400	45	500	340	480	1400	930	0.49							
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	25	25	51	0.59 J	0.48 J	9.9	31	34	0.58 J	11 J+	17	14	97	91	0.49							
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1100	1100	1200	34	20	290	1400	1400	41	950	550	480	4800	3700	0.6							
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.88 U	0.88 U	0.37 J	0.96 U	0.96 U	0.96 U	8.5 U	8.8 U	0.9 U	0.39 J	0.97 U	1 U	9.7 U	9.5 U	0.97							
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.44 U	0.44 U	0.49 U	0.48 U	0.48 U	0.48 U	4.2 U	4.4 U	0.45 U	0.46 U	0.48 U	0.5 U	4.8 U	4.8 U	0.49							
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.94 U	0.93 U	1 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.8 U	1.8 U	1.7 U	1.7 U	1.9 U	0.81 J	26 J	28 J	1.8 U	1.9 U	2.2 J	1.8 U	13 J	8.1 J	2							
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	92	89	380	1.9 U	1.9 U	32	1200	1200	1.8 U	4 J	190	28	810	230	7.2							
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	5.9	5 J	57	3.9 U	3.9 U	1.4 J	78	68	3.6 U	3.7 U	3.7 J	2.7 J	180	47 J	3.9							
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.2	2.4	11	0.25 U	0.25 U	6.5	49	52	0.24 U	120	16	5.7	9.6 J	9.6 J	0.26							
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.94 U	0.93 U	1 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.94 U	0.93 U	0.92 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.94 U	0.93 U	1 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	1.5 J	1 U	1.1 U	10 U	10 U	1							
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.94 U	0.93 U	0.92 U	1 U	1 U	1 U	9 U	9.3 U	0.96 U	0.98 U	1 U	1.1 U	10 U	10 U	1							
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3 U	2.3 U	2.6 U	2.5 U	2.5 U	2.6 U	23 U	23 U	2.4 U	2.4 U	2.6 U	2.7 U	26 U	25 U	2.6							
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.7 U	4.7 U	5.2 U	5.1 U	5.1 U	5.1 U	45 U	47 U	4.8 U	4.9 U	5.1 U	5.4 U	52 U	51 U	5.2							
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.7 U	3.7 U	4.1 U	4.1 U	4.1 U	4.1 U	36 U	37 U	3.8 U	3.9 U	4.1 U	4.3 U	41 U	41 U	4.1							
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.5 U	3.9 U	3.9 U	3.9 U	3.9 U	34 U	36 U	3.6 U	3.7 U	3.9 U	4.1 U	39 U	39 U	3.9							
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	18 U	19 U	1.9 U	2 U	2 U	1.9 U	20 U	20 U	1.8							
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.47 U	0.47 U	0.52 U	0.51 U	0.51 U	0.51 U	4.5 U	4.7 U	0.48 U	0.49 U	0.51 U	0.54 U	5.2 U	5.1 U	0.52							
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	56 U	56 U	62 U	61 U	61 U	61 U	540 U	560 U	57 U	59 U	62 U	64 U	620 U	610 U	62							
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.2 U	6.1 U	6.8 U	6.7 U	6.7 U	6.7 U	60 U	62 U	6.3 U	6.5 U	6.8 U	7.1 U	68 U	67 U	6.8							
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.2 U	6.1 U	6.8 U	6.7 U	6.7 U	6.7 U	60 U	62 U	6.3 U	6.5 U	6.8 U	7.1 U	68 U	67 U	6.8							
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.9 U	2.9 U	3.2 U	3.1 U	3.2 U	3.2 U	28 U	29 U	3 U	3 U	3.2 U	3.3 U	32 U	31 U	3.2							
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.2 U	8.2 U	9.1 U	8.9 U	9 U	9 U	79 U	82 U	8.4 U	8.6 U	9.1 U	9.4 U	91 U	89 U	9.1							
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	29 U	29 U	32 U	31 U	32 U	32 U	280 U	290 U	30 U	30 U	32 U	33 U	320 U	310 U	32							
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	29 U	29 U	32 U	31 U	32 U	32 U	280 U	290 U	30 U	30 U	32 U	33 U	320 U	310 U	32							

Notes:
N = Normal Field Sample
J = Concentration is estimated
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SDGs C3X5422-C3Z4689

SDG				C3Y5043																	
Location				004	FIELDQC		JBW8003B		JMW1665		OW01004		OW02001		OW07002		OW07003		RFW1145		SB/OW12001	
Sample Date				023	11/1/2023		11/1/2023		11/1/2023		11/1/2023		11/1/2023		11/1/2023		11/1/2023		11/1/2023		11/1/2023	
Sample ID				W18004 2023	LORNG_EB025_11012023		LORNG_EB026_11012023		LORNG_JBW8003B_11012023		LORNG_JMW1665_11012023		LORNG_OW01004_11012023		LORNG_OW02001_11012023		LORNG_OW07002_11012023		LORNG_OW07003_11012023		LORNG_RFW1145_35_11012023		LORNG_RFW1145_75_11012023		LORNG_SB/OW12001_11012023	
QC Code					EB		EB		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	U	1.9	U	1.9	U	31		6.6		40		2	U	39		95		170		56	J	25	J
		Perfluoropentanoic acid (PFPeA)	NG/L	U	0.49	U	0.48	U	76		12		120		0.51	U	110		380		420		150		57	
		Perfluorohexanoic acid (PFHxA)	NG/L	J	0.49	U	0.48	U	220		10		170		0.51	U	68		320		970		380		99	
		Perfluoroheptanoic acid (PFHpA)	NG/L	U	0.49	U	0.48	U	63		8		87		0.51	U	62		150		370		94		30	
		Perfluorooctanoic acid (PFOA)	NG/L	U	0.24	U	0.24	U	170		7.9		150		0.73	J	64		280		920		420		51	
		Perfluorononanoic acid (PFNA)	NG/L	U	0.49	U	0.48	U	15		0.72	J	14		0.51	U	15		38		100		18		5.7	J
		Perfluorodecanoic acid (PFDA)	NG/L	U	0.97	U	0.97	U	1	J	0.96	U	0.73	J	1	U	0.35	J	9.4	U	19		2.6	J	8.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	0.49	U	0.48	U	0.52	U	0.48	U	0.49	U	0.51	U	0.54	U	4.7	U	4.7	U	4.6	U	4.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	U	0.97	U	0.97	U	1	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	0.97	U	0.97	U	1	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	0.49	U	0.48	U	0.52	U	0.48	U	0.49	U	0.51	U	0.54	U	4.7	U	4.7	U	4.6	U	4.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	U	0.43	U	0.43	U	24	J-	2.4		24		0.15	J	15		93		100		41		42	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	U	0.46	U	0.45	U	55	J+	3.2		43		0.48	U	30		150		210		58		51	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	U	0.46	U	0.45	U	910	J+	37		800		0.22	J	250		1400		7400		2300		460	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	U	0.46	U	0.45	U	24	J+	0.69	J	19		0.48	U	9.2		69		180		40		30	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	J	0.46	U	0.45	U	1100		49		960		0.94	J	360		3900		11000		2200		2000	
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	0.92	U	0.91	U	0.58	J+	0.9	U	0.92	U	0.95	U	1	U	8.9	U	11	J	8.6	U	8.4	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	0.46	U	0.45	U	0.49	U	0.45	U	0.46	U	0.48	U	0.5	U	4.4	U	4.4	U	4.3	U	4.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	0.97	U	0.97	U	1	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	1.8	U	1.8	U	1.7	U	1.8	U	0.55	J	1.8	U	1.8	U	10	J	18	U	17	U	17	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L		1.8	U	1.8	U	32		1.8	U	72		1.9	U	11		820		180		130		76	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	3.7	U	3.7	U	18		3.6	U	61		3.8	U	3.9	J	150		35	J	37	J	34	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	U	0.24	U	0.24	U	14		0.36	J	17		0.25	U	0.68	J	6.1	J	360		64		2	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	0.97	U	0.97	U	1	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	0.97	U	0.97	U	0.9	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	0.97	U	0.97	U	1	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	0.97	U	0.97	U	0.9	U	0.96	U	0.98	U	1	U	1.1	U	9.4	U	9.4	U	9.1	U	8.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	U	2.4	U	26		2.6	U	2.4	U	2.4	U	2.5	U	2.7	U	24	U	24	U	23	U	22	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	U	4.9	U	4.8	U	4.5	U	4.8	U	4.9	U	5.1	U	5.4	U	47	U	47	U	46	U	45	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	3.9	U	3.9	U	4.2	U	3.8	U	3.9	U	4	U	4.3	U	38	U	38	U	37	U	36	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	3.7	U	3.7	U	3.9	U	3.6	U	3.7	U	3.8	U	4.1	U	36	U	36	U	35	U	34	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	1.9	U	1.9	U	1.8	U	1.9	U	2	U	1.8	U	1.9	U	19	U	19	U	18	U	18	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	0.49	U	0.48	U	0.52	U	0.48	U	0.49	U	0.51	U	0.46	U	4.7	U	4.7	U	4.6	U	4.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	58	U	58	U	62	U	57	U	59	U	61	U	64	U	570	U	570	U	550	U	540	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	6.4	U	6.4	U	6.9	U	6.3	U	6.5	U	6.7	U	7.1	U	62	U	62	U	60	U	59	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	6.4	U	6.4	U	6.9	U	6.3	U	6.5	U	6.7	U	7.1	U	62	U	62	U	60	U	59	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	3	U	3	U	3.2	U	3	U	3	U	3.1	U	3.3	U	29	U	29	U	28	U	28	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U	8.6	U	8.5	U	9.1	U	8.4	U	8.6	U	8.9	U	8.2	U	83	U	83	U	80	U	78	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	30	U	30	U	32	U	30	U	30	U	31	U	33	U	290	U	290	U	280	U	280	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	30	U	30	U	32	U	30	U	30	U	31	U	33	U	290	U	290	U	280	U	280	U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

		SDG	C3Y8381				C3Y8410								
		Location	JBW7215B	JBW7327		JMW0301C	AA07MW-01	AA11MW-02	AA20MW-01	BW01008		BW05007	BW05011D	BW05011S	BW06006
		Sample Date	11/2/2023	11/2/2023		11/2/2023	11/2/2023	11/2/2023	11/2/2023	11/2/2023		11/2/2023	11/3/2023	11/3/2023	11/2/2023
		Sample ID	LORNG_JBW7215B_11022023	LORNG_JBW7327_45_11022023	LORNG_JBW7327_45_11022023FD	LORNG_JMW0301C_11022023	LORNG_AA07MW-01_11022023	LORNG_AA11MW-02_11022023	LORNG_AA20MW-01_11022023	LORNG_BW01008_11022023	LORNG_BW01008_11022023FD	LORNG_BW05007_11022023	LORNG_BW05011D_11032023	LORNG_BW05011S_11032023	LORNG_BW06006_11022023
		QC Code	N	N	FD	N	N	N	N	N	FD	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6	6.6	6.6	11 J+	330	16	7.5 J	5.9 J	5.7 J	57	1.9 U	2 U	35
		Perfluoropentanoic acid (PFPeA)	NG/L	10	14	14	30	1400	38	8.9 J	17	16	180	0.48 U	0.5 U	83
		Perfluorohexanoic acid (PFHxA)	NG/L	8.2	32	32	46	1000	58	25	24	23	100	0.48 U	1.1 J	61
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.1	5.4	5.1	16	840	19	5.4 J	6.8	6.7	73	0.48 U	0.24 J	51
		Perfluorooctanoic acid (PFOA)	NG/L	5	7.4	8.1	49	830	25	13 J	28	26	52	0.24 U	0.25 U	45
		Perfluorononanoic acid (PFNA)	NG/L	1 J	0.36 J	0.41 J	2	150	1.6	2.6 J	1 J	1.1 J	11	0.48 U	0.5 U	13
		Perfluorodecanoic acid (PFDA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	25	0.95 U	9.2 U	0.98 U	0.95 U	0.49 J	0.97 U	1 U	0.32 J
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.46 U	0.46 U	0.46 U	0.46 U	5 J	0.48 U	4.6 U	0.49 U	0.47 U	0.48 U	0.48 U	0.5 U	0.49 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.46 U	0.46 U	0.46 U	0.46 U	5 U	0.48 U	4.6 U	0.49 U	0.47 U	0.48 U	0.48 U	0.5 U	0.49 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.4	1.6	1.6	5.5 J+	56	23	24	3.7	3.3	23	0.43 U	0.44 U	21
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.4 J	1.3 J	1.3 J	7.4 J+	94	29	43	5.1	4.7	29	0.46 U	0.47 U	24
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	20	19	18	270 J+	3000	210	600	110	110	250	0.46 U	0.47 U	250
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.43 J	0.43 U	0.21 J	2 J+	83	10	24	1.2 J	1.4 J	9.5	0.46 U	0.47 U	7.7
		Perfluorooctanesulfonic acid (PFOS)	NG/L	26	5.7	6.2	220 J+	7500	580	1400	57	60	730	0.46 U	0.47 U	530
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.86 U	0.87 U	0.86 U	0.87 UJ	3.5 J	0.9 U	8.6 U	0.92 U	0.89 U	0.91 U	0.91 U	0.94 U	0.91 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.43 U	0.43 U	0.43 U	0.43 UJ	4.7 U	0.45 U	4.3 U	0.46 U	0.45 U	0.46 U	0.46 U	0.47 U	0.46 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.92 U	0.92 U	0.92 U	0.92 UJ	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.7 U	4.9 J	5.2 J	1.8 U	9.3 J	1.8 U	17 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.7 U	930	1100	1.8 U	820	6.7	17 U	1.9 U	1.8 U	48	1.6 J	3.8 J	17
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.5 U	5.3 J	4.7 J	3.5 U	340	3.6 U	35 U	3.7 U	3.6 U	7.8	3.7 U	3.8 U	14
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.23 U	0.23 U	0.23 U	7.4	430	0.47 J	2.3 U	0.25 U	0.24 U	0.95 J	0.24 U	0.25 U	3.9
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.92 U	0.92 U	0.92 U	0.92 U	10 U	0.95 U	9.2 U	0.98 U	0.95 U	0.97 U	0.97 U	1 U	0.97 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3 U	2.3 U	2.3 U	2.3 U	25 U	2.4 U	23 U	2.5 U	2.4 U	2.4 U	2.4 U	2.5 U	2.4 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.6 U	4.6 U	4.6 U	4.6 U	50 U	4.8 U	46 U	4.9 U	4.7 U	4.8 U	4.8 U	5 U	4.9 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.7 U	3.7 U	3.7 U	3.7 U	40 U	3.8 U	37 U	3.9 U	3.8 U	3.9 U	3.9 U	4 U	3.9 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.5 U	3.5 U	3.5 U	3.5 U	38 U	3.6 U	35 U	3.7 U	3.6 U	3.7 U	3.7 U	3.8 U	3.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	20 U	1.9 U	18 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.46 U	0.46 U	0.46 U	0.46 U	5 U	0.48 U	4.6 U	0.49 U	0.47 U	0.48 U	0.48 U	0.5 U	0.49 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	55 U	55 U	55 U	55 U	600 U	57 U	550 U	59 U	57 U	58 U	58 U	60 U	58 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6 U	6.1 U	6.1 U	6.1 U	66 U	6.3 U	61 U	6.5 U	6.3 U	6.4 U	6.4 U	6.6 U	6.4 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6 U	6.1 U	6.1 U	6.1 U	66 U	6.3 U	61 U	6.5 U	6.3 U	6.4 U	6.4 U	6.6 U	6.4 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.8 U	2.9 U	2.8 U	2.9 U	31 U	3 U	28 U	3 U	2.9 U	3 U	3 U	3.1 U	3 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.1 U	8.1 U	8.1 U	8.1 U	88 U	8.4 U	81 U	8.6 U	8.3 U	8.5 U	8.5 U	8.8 U	8.6 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	28 U	29 U	28 U	29 U	310 U	30 U	280 U	30 U	29 U	30 U	30 U	31 U	30 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	28 U	29 U	28 U	29 U	310 U	30 U	280 U	30 U	29 U	30 U	30 U	31 U	30 U

Notes:

N = Normal Field Sample

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

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SDGs C3X5422-C3Z4689

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Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

		SDG		C3Y8410				C3Z4686										
		Location		UNK-034			UNK-TC01	FIELDQC					GC_BW002D	LYS01007D	LYS01007S	LYS05012D	LYS05012S	LYS07007D
		Sample Date		11/2/2023			11/2/2023	11/7/2023	11/8/2023		11/9/2023		11/8/2023	11/7/2023	11/7/2023	11/7/2023	11/7/2023	11/6/2023
		Sample ID		UNK-[illegible]022023	LORNG_UNK-034_180_11022023	LORNG_UNK-034_280_11022023	LORNG_UNK-TC01_11022023	LORNG_EB031_11072023	LORNG_EB032_11082023	LORNG_EB033_11082023	LORNG_EB034_11092023	LORNG_EB035_11092023	LORNG_GC_BW002D_11082023	LORNG_LYS01007D_11072023	LORNG_LYS01007S_11072023	LORNG_LYS05012D_11072023	LORNG_LYS05012S_11072023	LORNG_LYS07007D_11062023
		QC Code			N	N	N	EB	EB	EB	EB	EB	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	J	0.52 J	0.54 J	4.1 J	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	230	250	730	110	1500
		Perfluoropentanoic acid (PFPeA)	NG/L	J	0.68 J	0.68 J	2.4 J	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	760	620	2300	390	7000
		Perfluorohexanoic acid (PFHxA)	NG/L	J	0.71 J	0.74 J	1.9	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	1.2 J	1700	1400	3400	380	6900
		Perfluoroheptanoic acid (PFHpA)	NG/L	J	0.19 J	0.21 J	1.3 J	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	650	470	1200	660	3600
		Perfluorooctanoic acid (PFOA)	NG/L	J	0.39 J	0.44 J	1 J	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	1900	1100	1900	480	11000
		Perfluorononanoic acid (PFNA)	NG/L	U	0.47 U	0.48 U	0.27 J	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	120	130	58	28	480
		Perfluorodecanoic acid (PFDA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	3.5 J	10 J	10 U	10 U	100 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	0.47 U	0.48 U	0.45 U	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	5 U	5 U	5 U	5 U	50 U
		Perfluorododecanoic acid (PFDoA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	10 U	10 U	10 U	10 U	100 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	10 U	10 U	10 U	10 U	100 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	0.47 U	0.48 U	0.45 U	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	5 U	5 U	5 U	5 U	50 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	J	0.37 J	0.43 J	0.77 J	0.41 U	0.41 U	0.4 U	0.4 U	0.41 U	0.41 U	210	220	1000	57	4300
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	J	0.24 J	0.3 J	1.1 J	0.44 U	0.43 U	0.43 U	0.43 U	0.44 U	0.44 U	540	490	1300	75	9900
		Perfluorohexanesulfonic acid (PFHxS)	NG/L		1.3 J	1.4 J	12	0.44 U	0.48 U	0.5 U	0.43 U	0.44 U	0.44 U	12000	9600	11000	730	110000
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	J	0.45 U	0.45 U	0.24 J	0.44 U	0.43 U	0.43 U	0.43 U	0.44 U	0.44 U	180	180	190	37	1200
		Perfluorooctanesulfonic acid (PFOS)	NG/L		2.1	2.1	13	0.44 U	0.48 U	0.5 U	0.73 J	1.5	0.44 U	7100	17000	1400	8600	36000
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	0.89 U	0.9 U	0.85 U	0.88 U	0.87 U	0.86 U	0.86 U	0.88 U	0.87 U	9.4 U	9.4 U	9.4 U	9.4 U	94 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	0.45 U	0.45 U	0.43 U	0.44 U	0.43 U	0.43 U	0.43 U	0.44 U	0.44 U	4.7 U	4.7 U	4.7 U	4.7 U	47 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	10 U	10 U	10 U	10 U	100 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	1.8 U	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	19 U	19 U	42 J-	19 U	320 J
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L		1.8 U	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	2.6 J	10 J	25 J	2600	11 J	41000
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	3.6 U	3.6 U	3.5 U	3.6 U	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	38 U	38 U	27 J	64	380 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	U	0.24 U	0.24 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	29	71	14 J	400	25 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	1 U	10 U	10 U	10 U	10 U	100 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	1 U	10 U	10 U	10 U	10 U	100 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	10 U	10 U	10 U	10 U	100 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	0.95 U	0.95 U	0.91 U	0.94 U	0.92 U	0.91 U	0.92 U	0.94 U	0.93 U	10 U	10 U	10 U	10 U	100 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	U	2.4 U	2.4 U	2.3 U	2.5 J	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	25 U	25 U	25 U	25 U	250 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	U	4.7 U	4.8 U	4.5 U	2.8 J	4.6 U	4.6 U	4.6 U	4.7 U	2.8 J	50 U	50 U	50 U	50 U	500 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	3.8 U	3.8 U	3.6 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	40 U	40 U	40 U	40 U	400 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	3.6 U	3.6 U	3.5 U	3.6 U	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	38 U	38 U	38 U	38 U	380 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	20 U	20 U	20 U	20 U	200 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	0.47 U	0.48 U	0.45 U	0.47 U	0.46 U	0.46 U	0.46 U	0.47 U	0.46 U	5 U	5 U	5 U	5 U	50 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	57 U	57 U	55 U	56 U	55 U	55 U	55 U	56 U	56 U	600 U	600 U	600 U	600 U	6000 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	6.3 U	6.3 U	6 U	6.2 U	6.1 U	6 U	6.1 U	6.2 U	6.1 U	66 U	66 U	66 U	66 U	660 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	6.3 U	6.3 U	6 U	6.2 U	6.1 U	6 U	6.1 U	6.2 U	6.1 U	66 U	66 U	66 U	66 U	660 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	2.9 U	3 U	2.8 U	2.9 U	2.9 U	2.8 U	2.8 U	2.9 U	2.9 U	31 U	31 U	31 U	31 U	310 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U	8.3 U	8.4 U	8 U	8.2 U	8.1 U	8 U	8.1 U	8.2 U	8.2 U	88 U	88 U	88 U	88 U	880 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	29 U	30 U	28 U	29 U	29 U	28 U	28 U	29 U	29 U	310 U	310 U	310 U	310 U	3100 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	29 U	30 U	28 U	29 U	29 U	28 U	28 U	29 U	29 U	310 U	310 U	310 U	310 U	3100 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

				SDG	C3Z4686				C3Z4689		
				Location	LYS07007DDUP	LYS07007S	LYS07007SDUP	UNK-033	JBW7327		JBW7742A
				Sample Date	11/6/2023	11/7/2023	11/7/2023	11/7/2023	11/8/2023	11/9/2023	11/10/2023
				Sample ID	LORNG_LYS07007DDUP_11062023	LORNG_LYS07007S_11072023	LORNG_LYS07007SDUP_11072023	LORNG_UNK-033_11072023	LORNG_JBW7327_158_11082023	LORNG_JBW7327_265_11092023	LORNG_JBW7742A_11102023
				QC Code	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1500	2000	1300	10	4.3 J	5.7 J	1.7 J
		Perfluoropentanoic acid (PFPeA)	NG/L	6500	7500	5000	30	10 J	11	3.4
		Perfluorohexanoic acid (PFHxA)	NG/L	6000	4700	3500	27	9.2	11	3.4
		Perfluoroheptanoic acid (PFHpA)	NG/L	3100	2300	1700	13	2.9	4	2
		Perfluorooctanoic acid (PFOA)	NG/L	7900	1700	1500	14	7.1	9.4	2.2
		Perfluorononanoic acid (PFNA)	NG/L	540	500	710	2.1	0.43 U	0.5 U	0.49 U
		Perfluorodecanoic acid (PFDA)	NG/L	100 U	32 J	30 J	0.93 U	0.85 U	1 U	0.97 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	50 U	50 U	50 U	0.47 U	0.43 U	0.5 U	0.49 U
		Perfluorododecanoic acid (PFDoA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	50 U	50 U	50 U	0.47 U	0.43 U	0.5 U	0.49 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3300	1800	1100	13	1.5	1.8	0.51 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	7500	2700	1700	17	1.3	1.8	0.53 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	69000	16000	11000	120	20	31	4
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2300	650	1300	3.3	0.4 U	0.23 J	0.46 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	44000	100000	130000	140	6	11	3.7
		Perfluorononanesulfonic acid (PFNS)	NG/L	94 U	94 U	94 U	0.88 U	0.8 U	0.94 U	0.91 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	47 U	47 U	47 U	0.44 U	0.4 U	0.47 U	0.46 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	320 J	64 J	100 J	1.8 U	1.6 U	1.9 U	1.8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	28000	3100	6000	1.8 U	7.3	5.1 J	13
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	380 U	210 J	290 J	3.5 U	3.2 U	3.8 U	3.7 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	25 U	25 U	25 U	0.23 U	0.18 J	0.25 U	0.24 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	100 U	100 U	100 U	0.93 U	0.85 U	1 U	0.97 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	250 U	250 U	250 U	2.3 U	2.1 U	2.5 U	2.4 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	500 U	500 U	500 U	4.7 U	4.3 U	5 U	4.9 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	400 U	400 U	400 U	3.7 U	3.4 U	4 U	3.9 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	380 U	380 U	380 U	3.5 U	3.2 U	3.8 U	3.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	200 U	200 U	200 U	1.9 U	2.1 U	2 U	1.9 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	50 U	50 U	50 U	0.47 U	0.43 U	0.5 U	0.49 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	6000 U	6000 U	6000 U	56 U	51 U	60 U	58 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	660 U	660 U	660 U	6.2 U	5.6 U	6.6 U	6.4 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	660 U	660 U	660 U	6.2 U	5.6 U	6.6 U	6.4 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	310 U	310 U	310 U	2.9 U	2.6 U	3.1 U	3 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	880 U	880 U	880 U	8.2 U	7.5 U	8.8 U	8.5 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	3100 U	3100 U	3100 U	29 U	26 U	31 U	30 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	3100 U	3100 U	3100 U	29 U	26 U	31 U	30 U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

SDG				C3Z4686								C3Z4689								
Location				LYS07007DDUP		LYS07007S		LYS07007SDUP		UNK-033		JBW7327				JBW7742A				
Sample Date				11/6/2023		11/7/2023		11/7/2023		11/7/2023		11/8/2023		11/9/2023		11/10/2023				
Sample ID				LORNG_LYS07007DDUP_11062023		LORNG_LYS07007S_11072023		LORNG_LYS07007SDUP_11072023		LORNG_UNK-033_11072023		LORNG_JBW7327_158_11082023		LORNG_JBW7327_265_11092023		LORNG_JBW7742A_11102023				
QC Code				N		N		N		N		N		N		N				
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier			

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 4/11/24
Checked by: JAR
Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5422	E1633DR	T	XKN815	LORNG_JBW7614_10192023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.1	J	2.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.84	J	0.84	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.21	J	0.21	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.4	J	0.4	J	TR	NG/L
			XKN817	LORNG_JBW7710_10202023	Perfluorobutanoic acid (PFBA)	4.3	J	4.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.61	J	0.61	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.88	J	0.88	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.43	J	0.43	UJ	LBL, IAG	NG/L
			XKN818	LORNG_JMW1981_10202023	Perfluorobutanoic acid (PFBA)	5	J	5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.51	J	0.51	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.65	J	0.65	J	TR	NG/L
			XKN816	LORNG_JPZ7704_10192023	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.24	J	0.24	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.49	J	0.49	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.1	U	1.1	UJ	EISL	NG/L
			XKN819	LORNG_OW23001_10232023	Perfluorobutanoic acid (PFBA)	5.4	J	5.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.75	J	0.75	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.49	J	0.49	J	TR	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.87	U	0.87	UJ	MSL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.12	J	0.12	J	TR	NG/L

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7078	E1633DR	T	XKW835	LORNG_BW13003_10242023	Perfluorobutanoic acid (PFBA)	6.3	J	6.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.91	J	0.91	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.31	J	0.31	U	LBL	NG/L
			XKW836	LORNG_BW13003_10242023FD	Perfluorobutanoic acid (PFBA)	5.8	J	5.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.86	J	0.86	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.3	J	0.3	U	LBL	NG/L
			XKW837	LORNG_JBW7305_107_10252023	Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.46	J	0.46	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.15	J	0.15	UJ	LBL, IAG	NG/L
			XKW838	LORNG_JBW7305_33_10252023	Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.43	J	0.43	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.99	J	0.99	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.19	J	0.19	U	LBL	NG/L
			XKW833	LORNG_JMW3102_10242023	Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.32	J	0.32	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.21	J	0.21	U	LBL	NG/L
			XKW840	LORNG_JMW3601_10252023	Perfluorobutanoic acid (PFBA)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6		4.6	J-	EISH, IAG	NG/L
					Perfluorononanoic acid (PFNA)	0.36	J	0.36	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.75	J	0.75	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.8	J	0.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.18	J	0.18	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.17	J	0.17	U	LBL	NG/L

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Table 3
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7078	E1633DR	T	XKW841	LORNG_JPZ0348_10252023	Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8		2.8	J	IAG	NG/L
			XKW839	LORNG_JPZ1780_10252023	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.73	J	0.73	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.67	J	0.67	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.48	J	0.48	J	TR	NG/L
			XKW834	LORNG_MMW0004_10242023	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.1		4.1	J	IAG	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.9	J	0.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.41	J	0.41	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.28	J	0.28	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.1		2.1	J+	EBG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.2	J	0.2	J	TR	NG/L
C3Y0329	E1633DR	T	XLQ492	LORNG_AA11MW-01_10262023	Perfluorononanoic acid (PFNA)	0.42	J	0.42	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.3	J	3.3	J	TR	NG/L
			XLQ504	LORNG_AA18MW-01_10272023	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.82	J	0.82	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
			XLQ483	LORNG_BW06005_10262023	Perfluorodecanoic acid (PFDA)	0.3	J	0.3	J	TR	NG/L
			XLQ493	LORNG_BW06007_10262023	Perfluorodecanoic acid (PFDA)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	2.2	J	2.2	J	TR	NG/L
			XLQ494	LORNG_BW06007_10262023FD	Perfluorodecanoic acid (PFDA)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	2.2	J	2.2	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y0329	E1633DR	T	XLQ505	LORNG_BW07001_10272023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.21	J	0.21	J	SNL, TR	NG/L
			XLQ506	LORNG_BW07002_10272023	Perfluorooctane sulfonamide (PFOSA)	2.6		2.6	J	SNL	NG/L
			XLQ484	LORNG_BW08003_10262023	Perfluorononanoic acid (PFNA)	0.63	J	0.63	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.3	J	0.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2	J	2	J	TR	NG/L
			XLQ485	LORNG_FMW3413_10262023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.33	J	0.33	J	IAG, TR	NG/L
			XLQ497	LORNG_JBW7350_10262023	Perfluorobutanoic acid (PFBA)	4	J	4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.33	J	0.33	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.25	J	0.25	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.48	J	0.48	J	TR	NG/L
			XLQ498	LORNG_JBW7711_10262023	Perfluorobutanoic acid (PFBA)	4.1	J	4.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.59	J	0.59	J	TR	NG/L
			XLQ486	LORNG_JBW7738A_10262023	Perfluorononanoic acid (PFNA)	0.4	J	0.4	J	TR	NG/L
			XLQ487	LORNG_JBW7738B_10262023	Perfluorononanoic acid (PFNA)	0.45	J	0.45	J	TR	NG/L
			XLQ499	LORNG_JBW7753A_10272023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.4	J	3.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y0329	E1633DR	T	XLQ488	LORNG_JMW1565_10262023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.9	J	4.9	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.39	J	0.39	J	IAG, TR	NG/L
			XLQ489	LORNG_MMW0010_10262023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.9	J	0.9	J	TR	NG/L
			XLQ490	LORNG_MMW0010_10262023FD	Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.84	J	0.84	J	TR	NG/L
			XLQ500	LORNG_MMW0011_10262023TEST	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.78	J	0.78	J	TR	NG/L
			XLQ501	LORNG_MMW0011_10272023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	TR	NG/L
			XLQ502	LORNG_MMW0017_10262023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.83	J	0.83	J	TR	NG/L
			XLQ507	LORNG_OW12002_10272023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.42	J	0.42	J	TR	NG/L
			XLQ503	LORNG_OW17003_10262023	Perfluorobutanoic acid (PFBA)	4.5	J	4.5	U	EBL	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	J	1.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.3	J	0.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.57	J	0.57	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.34	J	0.34	J	TR	NG/L
			XLQ503	LORNG_OW17003_10262023	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.5	J	2.5	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y0329	E1633DR	T	[illegible]	[illegible]	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	3.3	J	3.3	J	TR	NG/L
			XLQ508	LORNG_RFW1147_10272023	Perfluorodecanoic acid (PFDA)	0.46	J	0.46	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.3	J	2.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1	U	1	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1	U	1	R	EISL	NG/L
			XLQ491	LORNG_UNK-044_10262023	Perfluorobutanoic acid (PFBA)	3.9	J	3.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
C3Y0355	E1633DR	T	XLQ600	LORNG_JMW1960_10262023	Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.1	J	3.1	J	TR	NG/L
			XLQ598	LORNG_OW08002_10272023	Perfluorodecanoic acid (PFDA)	0.32	J	0.32	J	TR	NG/L
			XLQ599	LORNG_OW08002_10272023FD	Perfluorodecanoic acid (PFDA)	0.37	J	0.37	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.7	J	2.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	3.6	J	3.6	J	TR	NG/L
			XLQ601	LORNG_OW09001_10262023	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
			XLQ602	LORNG_OW09001_10262023FD	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
C3Y1766	E1633DR	T	XLY493	LORNG_JPZ0342_10302023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.66	J	0.66	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	2.5	J	2.5	J	TR	NG/L
			XMG133	LORNG_JBW7335A_10312023	Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.39	J	0.39	J	IAG, TR	NG/L
			XMG132	LORNG_JBW7335B_10312023	Perfluorononanoic acid (PFNA)	0.72	J	0.72	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y3189	E1633DR	T	XMG132	LORNG_BW7338B_10312023	Perfluoroheptanesulfonic acid (PFHpS)	0.43	J	0.43	J	TR	NG/L
			XMG134	LORNG_JEBS-4_10312023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.84	J	0.84	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.62	J	0.62	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.27	J	0.27	J	TR	NG/L
C3Y3233	E1633DR	T	XMG320	LORNG_AA20MW-02_10312023	Perfluorononanoic acid (PFNA)	0.83	J	0.83	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.6	J	1.6	J	TR	NG/L
			XMG321	LORNG_AA20MW-02_10312023FD	Perfluorononanoic acid (PFNA)	0.95	J	0.95	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	J	1.7	J	TR	NG/L
			XMG330	LORNG_BW12006_10312023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.4	J	1.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.34	J	0.34	J	IAG, TR	NG/L
			XMG331	LORNG_BW18008_10312023	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.63	J	0.63	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.73	J	0.73	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.52	J	0.52	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.17	J	0.17	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.36	J	0.36	J	TR	NG/L
			XMG332	LORNG_BW20001_10312023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4	J	4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	4.9	J	4.9	J	TR	NG/L
			XMG335	LORNG_FMW3410_10312023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.96	J	0.96	J	TR	NG/L
			XMG336	LORNG_JBW7338B_10312023	Perfluorononanoic acid (PFNA)	0.73	J	0.73	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y3233	E1633DR	T	XMG336	LORNG_JBW7388B_10312023	Perfluoroheptanesulfonic acid (PFHpS)	0.68	J	0.68	J	TR	NG/L
			XMG337	LORNG_JBW7339A_10312023	Perfluorodecanoic acid (PFDA)	0.33	J	0.33	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	14		14	J	IAG	NG/L
			XMG322	LORNG_JBW7339B_10312023	Perfluorodecanoic acid (PFDA)	0.43	J	0.43	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.2	J	1.2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	4.4	J	4.4	J	TR	NG/L
			XMG323	LORNG_JBW7737A_10312023	Perfluorononanoic acid (PFNA)	0.78	J	0.78	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.5	J	3.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.36	J	0.36	J	TR	NG/L
			XMG338	LORNG_JBW7737A_10312023FD	Perfluorononanoic acid (PFNA)	0.69	J	0.69	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.8	J	3.8	J	TR	NG/L
			XMG324	LORNG_JBW7737B_10312023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.2	J	1.2	J	IAG, TR	NG/L
			XMG325	LORNG_JBW7737B_10312023FD	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	TR	NG/L
			XMG326	LORNG_JBW7912_150_10312023	Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.87	J	0.87	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.79	J	0.79	J	TR	NG/L
			XMG327	LORNG_JBW7912_46_10312023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.69	J	0.69	J	TR	NG/L
			XMG328	LORNG_JMW0683_10312023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.8	J	3.8	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.4	J	1.4	J	IAG, TR	NG/L
					Perfluorobutanoic acid (PFBA)	2.4	J	2.4	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y3233	E1633DR	T	XMG329	LORNG_LF3MW4_10312023	Perfluoropentanoic acid (PFPeA)	3	J	3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.36	J	0.36	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.69	J	0.69	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.58	J	0.58	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.21	J	0.21	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.2	J	2.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.24	J	0.24	J	IAG, TR	NG/L
			XMG340	LORNG_OW05002_10312023FD	Perfluorodecanoic acid (PFDA)	0.3	J	0.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	5	J	5	J	TR	NG/L
C3Y5028	E1633DR	T	XMP629	LORNG_BW05009_11012023	Perfluoropentanoic acid (PFPeA)	430		430	J	IAG	NG/L
					Perfluorodecanoic acid (PFDA)	0.96	J	0.96	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	84		84	J-	EISH	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.37	J	0.37	J	TR	NG/L
			XMP628	LORNG_JBW7304_11012023	Perfluorononanoic acid (PFNA)	0.64	J	0.64	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.59	J	0.59	J	TR	NG/L
			XMP626	LORNG_JBW7336A_11012023	Perfluoropentanoic acid (PFPeA)	8.2		8.2	J	IAG	NG/L
					Perfluorononanoic acid (PFNA)	0.57	J	0.57	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.48	J	0.48	J	TR	NG/L

Table 3
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y5028	E1633DR	T	XMP627	LORNG_OW08001_11012023	Perfluorodecanoic acid (PFDA)	0.36	J	0.36	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.81	J	0.81	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.4	J	1.4	J	TR	NG/L
C3Y5043	E1633DR	T	XMP811	LORNG_AA07MW-02_11012023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	26	J	26	J	TR	NG/L
			XMP812	LORNG_AA07MW-02_11012023FD	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	28	J	28	J	TR	NG/L
			XMP813	LORNG_ASMW101_11012023	Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.58	J	0.58	J	TR	NG/L
			XMP814	LORNG_BSMW3S_11012023	Perfluorodecanoic acid (PFDA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	11		11	J+	MSH	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.39	J	0.39	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4	J	4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.5	J	1.5	J	TR	NG/L
			XMP691	LORNG_BW01005_11012023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.36	J	0.36	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	2.2	J	2.2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.7	J	3.7	J	TR	NG/L
			XMP692	LORNG_BW01007_11012023	Perfluorodecanoic acid (PFDA)	0.35	J	0.35	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	2.7	J	2.7	J	TR	NG/L
			XMP693	LORNG_BW07003_11012023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	13	J	13	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.6	J	9.6	J	TR	NG/L

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y5043	E1633DR	T	XMP694	LORNG_BW12005_11012023	Perfluorobutanoic acid (PFBA)	64	J	64	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	140		140	J	IAG	NG/L
					Perfluorononanoic acid (PFNA)	1.7	J	1.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8.1	J	8.1	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	47	J	47	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.6	J	9.6	J	TR	NG/L
			XMP695	LORNG_BW18004_11012023	Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.6	J	0.6	J	TR	NG/L
			XMP815	LORNG_JBW8003B_11012023	Perfluorodecanoic acid (PFDA)	1	J	1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	24		24	J-	EISH	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	55		55	J+	MSH	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	910		910	J+	MSH	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	24		24	J+	MSH	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.58	J	0.58	J+	MSH, TR	NG/L
			XMP816	LORNG_JMW1665_11012023	Perfluorononanoic acid (PFNA)	0.72	J	0.72	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.69	J	0.69	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.36	J	0.36	J	TR	NG/L
			XMP817	LORNG_OW01004_11012023	Perfluorodecanoic acid (PFDA)	0.73	J	0.73	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.55	J	0.55	J	TR	NG/L
			XMP696	LORNG_OW02001_11012023	Perfluorooctanoic acid (PFOA)	0.73	J	0.73	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.15	J	0.15	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.22	J	0.22	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.94	J	0.94	J	IAG, TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y5043	E1633DR	T	XMP697	LORNG_OW07002_11012023	Perfluorodecanoic acid (PFDA)	0.35	J	0.35	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.9	J	3.9	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.68	J	0.68	J	IAG, TR	NG/L
			XMP818	LORNG_OW07003_11012023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	10	J	10	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	6.1	J	6.1	J	TR	NG/L
			XMP698	LORNG_RFW1145_35_11012023	Perfluorononanesulfonic acid (PFNS)	11	J	11	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	35	J	35	J	TR	NG/L
			XMP699	LORNG_RFW1145_75_11012023	Perfluorobutanoic acid (PFBA)	56	J	56	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	2.6	J	2.6	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	37	J	37	J	TR	NG/L
			XMP700	LORNG_SB/OW12001_11012023	Perfluorobutanoic acid (PFBA)	25	J	25	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	5.7	J	5.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	J	2	J	TR	NG/L
C3Y8381	E1633DR	T	XNJ020	LORNG_JBW7215B_11022023	Perfluorononanoic acid (PFNA)	1	J	1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	J	0.43	J	TR	NG/L
			XNJ022	LORNG_JBW7327_45_11022023	Perfluorononanoic acid (PFNA)	0.36	J	0.36	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	4.9	J	4.9	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	5.3	J	5.3	J	TR	NG/L
			XNJ023	LORNG_JBW7327_45_11022023FD	Perfluorononanoic acid (PFNA)	0.41	J	0.41	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.21	J	0.21	J	TR	NG/L
			XNJ023	LORNG_JBW7327_45_11022023FD	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	5.2	J	5.2	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y8381	E1633DR	T	XNJ021	LORNG_JMW0301C_11022023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	4.7	J	4.7	J	TR	NG/L
					Perfluorobutanoic acid (PFBA)	11		11	J+	EISL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	5.5		5.5	J+	EISL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	7.4		7.4	J+	EISL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	270		270	J+	EISL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2		2	J+	EISL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	220		220	J+	EISL	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.87	U	0.87	UJ	EISL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	EISL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.92	U	0.92	UJ	EISL	NG/L
C3Y8410	E1633DR	T	XNJ138	LORNG_AA07MW-01_11022023	Perfluoroundecanoic acid (PFUnA)	5	J	5	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	3.5	J	3.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	9.3	J	9.3	J	TR	NG/L
			XNJ175	LORNG_AA11MW-02_11022023	Perfluorooctane sulfonamide (PFOSA)	0.47	J	0.47	J	TR	NG/L
			XNJ176	LORNG_AA20MW-01_11022023	Perfluorobutanoic acid (PFBA)	7.5	J	7.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	8.9	J	8.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	5.4	J	5.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	13	J	13	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.6	J	2.6	J	TR	NG/L
			XNJ206	LORNG_BW01008_11022023	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1	J	1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L

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Date:4/11/24
Checked by: JAR
Date: 4/15/24

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y8410	E1633DR	T	XNJ207	LORNG_BW01008_11022023FD	Perfluorobutanoic acid (PFBA)	5.7	J	5.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
			XNJ177	LORNG_BW05007_11022023	Perfluorodecanoic acid (PFDA)	0.49	J	0.49	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.95	J	0.95	J	TR	NG/L
			XNJ208	LORNG_BW05011D_11032023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.6	J	1.6	J	TR	NG/L
			XNJ209	LORNG_BW05011S_11032023	Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.24	J	0.24	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.8	J	3.8	J	TR	NG/L
			XNJ178	LORNG_BW06006_11022023	Perfluorodecanoic acid (PFDA)	0.32	J	0.32	J	IAG, TR	NG/L
			XNJ139	LORNG_JBW8004B_11022023	Perfluorobutanoic acid (PFBA)	58	J	58	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	48	J	48	J	TR	NG/L
			XNJ214	LORNG_JMW0682_11032023	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.27	J	0.27	J	TR	NG/L
			XNJ179	LORNG_JMW1982_11022023	Perfluorobutanoic acid (PFBA)	19	J	19	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	8	J	8	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	21	J	21	J	TR	NG/L
			XNJ180	LORNG_JMW8011_11022023	Perfluorobutanoic acid (PFBA)	53	J	53	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	38	J	38	J	TR	NG/L
			XNJ215	LORNG_MMW0330_11032023	Perfluorobutanoic acid (PFBA)	7.5	J	7.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.7	J	3.7	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y8410	E1633DR	T	XNJ140	LORNG_MMW8015_11022023	Perfluorobutanoic acid (PFBA)	52	J	52	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	35	J	35	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	59	J	59	J	TR	NG/L
			XNJ141	LORNG_OW01002_11022023	Perfluorodecanoic acid (PFDA)	5.1	J	5.1	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	6.4	J	6.4	J	TR	NG/L
			XNJ181	LORNG_OW07001_11022023	Perfluorobutanoic acid (PFBA)	300	J	300	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	320	J	320	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	17	J	17	J	SNL, TR	NG/L
			XNJ182	LORNG_UNK-034_180_11022023	Perfluorobutanoic acid (PFBA)	0.52	J	0.52	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.68	J	0.68	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.71	J	0.71	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.19	J	0.19	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.39	J	0.39	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.37	J	0.37	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.24	J	0.24	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.3	J	TR	NG/L
			XNJ183	LORNG_UNK-034_280_11022023	Perfluorobutanoic acid (PFBA)	0.54	J	0.54	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.68	J	0.68	J	IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.74	J	0.74	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.21	J	0.21	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.44	J	0.44	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.43	J	0.43	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.3	J	0.3	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanoic acid (PFBA)	1	J	1	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y8410	E1633DR	T	XNJ144	LORNG_UNK-034_80_11022023	Perfluoropentanoic acid (PFPeA)	0.95	J	0.95	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.48	J	0.48	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.91	J	0.91	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.73	J	0.73	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.68	J	0.68	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.24	J	0.24	J	TR	NG/L
			XNJ145	LORNG_UNK-TC01_11022023	Perfluorobutanoic acid (PFBA)	4.1	J	4.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1	J	1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.27	J	0.27	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.77	J	0.77	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.24	J	0.24	J	TR	NG/L
C3Z4686	E1633DR	T	XOP727	LORNG_GC_BW002D_11082023	Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.6	J	2.6	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	2.8	J	2.8	J	TR	NG/L
			XOP728	LORNG_LYS01007D_11072023	Perfluorodecanoic acid (PFDA)	3.5	J	3.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	10	J	10	J	TR	NG/L
			XOP729	LORNG_LYS01007S_11072023	Perfluorodecanoic acid (PFDA)	10	J	10	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	25	J	25	J	TR	NG/L
			XOP730	LORNG_LYS05012D_11072023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	42	J	42	J-	EISH, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	27	J	27	J	TR	NG/L

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SDGs C3X5422-C3Z4689

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Z4686	E1633DR	T			Perfluorooctane sulfonamide (PFOSA)	14	J	14	J	IAG, TR	NG/L
			XOP731	LORNG_LYS05012S_11072023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	11	J	11	J	TR	NG/L
			XOP732	LORNG_LYS07007D_11062023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	320	J	320	J	TR	NG/L
			XOP733	LORNG_LYS07007DDUP_11062023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	320	J	320	J	TR	NG/L
			XOP734	LORNG_LYS07007S_11072023	Perfluorodecanoic acid (PFDA)	32	J	32	J	IAG, TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	64	J	64	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	210	J	210	J	TR	NG/L
			XOP735	LORNG_LYS07007SDUP_11072023	Perfluorodecanoic acid (PFDA)	30	J	30	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	100	J	100	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	290	J	290	J	TR	NG/L
			XOP736	LORNG_UNK-033_11072023	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.7	J	4.7	U	EBL	NG/L
C3Z4689	E1633DR	T	XOP819	LORNG_JBW7327_158_11082023	Perfluorobutanoic acid (PFBA)	4.3	J	4.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	10		10	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.18	J	0.18	J	TR	NG/L
			XOP817	LORNG_JBW7327_265_11092023	Perfluorobutanoic acid (PFBA)	5.7	J	5.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.23	J	0.23	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	5.1	J	5.1	J	TR	NG/L

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X5422-C3Z4689

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Z4689	E1633DR	T	XOP818	LORNG_JBW7742A_11102023	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.51	J	0.51	J	IAG, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.53	J	0.53	J	TR	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

EBG = Analyte detected in equipment blank; concentration in sample is greater than LOQ

EBL = Analyte detected in equipment blank; concentration in sample is less than LOQ

EISH = High extracted internal standard recovery

EISL = Low extracted internal standard recovery

IAG = Transition ion ratio outside limits

LBL = Analyte detected in laboratory blank; concentration in sample is less than LOQ

MSH = MS/MSD recovery greater than the upper control limit

MSL = MS/MSD recovery less than the lower control limit

SNL = Signal to noise ratio outside criteria

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:4/11/24
Checked by: JAR
Date: 4/15/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3X7078	LORNG_BW13003_10242023	LORNG_BW13003_10242023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6.3	J	5.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	16		16		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	15		15		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	19		19		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	19		19		0	
				Perfluorononanoic acid (PFNA) (NG/L)	2.6		2.7		4	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3		3		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.4		3.5		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	26		27		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.91	J	0.86	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	48		48		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.98	U	0.98	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.49	U	0.49	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2	U	2	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2	U	2	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	4	U	4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.31	U	0.3	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.6	U	2.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.2	U	5.2	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.2	U	4.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.52	U	0.52	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	63	U	63	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.9	U	6.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.9	U	6.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.2	U	3.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.2	U	9.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	32	U	32	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	32	U	32	U	NC	
C3Y0329	LORNG_BW06007_10262023	LORNG_BW06007_10262023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	100		99		1	
				Perfluoropentanoic acid (PFPeA) (NG/L)	310		320		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	150		150		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	150		150		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	76		75		1	
				Perfluorononanoic acid (PFNA) (NG/L)	16		16		0	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.3	J	1.3	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	12		12		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	14		14		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	100		100		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.2		3.2		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	170		180		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.98	U	0.98	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.49	U	0.49	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2.2	J	2.2	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	250		240		4	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	61		61		0	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.9		2.9		0	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.6	U	2.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.2	U	5.2	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.2	U	4.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.52	U	0.52	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	63	U	62	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.9	U	6.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.9	U	6.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.2	U	3.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.2	U	9.2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	32	U	32	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	32	U	32	U	NC	
C3Y0329	LORNG_MMW0010_10262023	LORNG_MMW0010_10262023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	8.7		8.7		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	19		19		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	20		19		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	11		12		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	15		15		0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.4	J	1.2	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.52	U	0.51	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.52	U	0.51	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.9		3.7		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.1		4.4		7	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	64		65		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.3	J	1.4	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	82		85		4	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.97	U	0.95	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.49	U	0.48	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	2	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.9	U	3.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.9	J	0.84	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.6	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.2	U	5.1	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.1	U	4.1	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.52	U	0.51	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	62	U	61	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.8	U	6.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.8	U	6.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.2	U	3.1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	8.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	32	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	32	U	31	U	NC	
C3Y0355	LORNG_OW08002_10272023	LORNG_OW08002_10272023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	22		22		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	72		70		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	81		81		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	30		29		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	82		84		2	
				Perfluorononanoic acid (PFNA) (NG/L)	3.5		3.3		6	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.32	J	0.37	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.92	U	0.92	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.92	U	0.92	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	12		13		8	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	18		17		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	360		330		9	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	4.8		4.3		11	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	230		260		12	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.86	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.92	U	0.92	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	U	1.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5		9.2		20	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.5	U	3.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	7.4		6.9		7	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.92	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.92	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.92	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.92	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.7	J	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.6	U	3.6	J	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.46	U	0.46	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	55	U	55	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.1	U	6.1	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.1	U	6.1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.8	U	2.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.1	U	8.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	28	U	28	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	28	U	28	U	NC	
C3Y0355	LORNG_OW09001_10262023	LORNG_OW09001_10262023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	7.7		7.9		3	
				Perfluoropentanoic acid (PFPeA) (NG/L)	14		16		13	
				Perfluorohexanoic acid (PFHxA) (NG/L)	21		24		13	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	7.7		8.8		13	
				Perfluorooctanoic acid (PFOA) (NG/L)	21		23		9	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.97	U	0.96	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.49	U	0.48	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.97	U	0.96	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.97	U	0.96	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.49	U	0.48	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.3		3.7		11	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4		4.4		10	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	150		140		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.4	J	1.4	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	65		76		16	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.91	U	0.91	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.46	U	0.45	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.97	U	0.96	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.7		1.8		6	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.97	U	0.96	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.97	U	0.96	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.97	U	0.96	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.97	U	0.96	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.4	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.9	U	4.8	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.9	U	3.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.49	U	0.48	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	58	U	58	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.4	U	6.4	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.4	U	6.4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3	U	3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.6	U	8.5	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	30	U	30	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	30	U	30	U	NC	
C3Y3233	LORNG_AA20MW-02_10312023	LORNG_AA20MW-02_10312023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	17		17		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	31		30		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	110		110		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	22		21		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	49		49		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.83	J	0.95	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.96	U	0.97	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.48	U	0.48	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.96	U	0.97	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.96	U	0.97	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.48	U	0.48	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	130		130		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	150		170		12	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	970		1200		21	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	12		13		8	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	300		260		14	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.9	U	0.91	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.45	U	0.46	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.96	U	0.97	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.6	J	1.7	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.24	U	0.24	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.96	U	0.97	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.96	U	0.97	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.96	U	0.97	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.96	U	0.97	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.4	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.8	U	4.8	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.8	U	3.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.48	U	0.48	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	58	U	58	U	NC	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.3	U	6.4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.3	U	6.4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3	U	3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.4	U	8.5	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	30	U	30	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	30	U	30	U	NC	
C3Y3233	LORNG_JBW7737A_10312023	LORNG_JBW7737A_10312023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	13		12		8	
				Perfluoropentanoic acid (PFPeA) (NG/L)	31		30		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	47		46		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	12		12		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	17		17		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.78	J	0.69	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	0.92	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.46	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	0.92	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	0.92	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.46	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	21		22		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	22		21		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	130		110		17	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	6.5		5.4		18	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	330		380		14	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.87	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.43	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	0.92	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	3.5	J	3.8	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.36	J	0.23	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	4.6	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.46	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	55	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.1	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	29	U	NC	
C3Y3233	LORNG_JBW7737B_10312023	LORNG_JBW7737B_10312023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12		12		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	26		26		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	37		37		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	17		17		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	23		22		4	
				Perfluorononanoic acid (PFNA) (NG/L)	2.3		2.5		8	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.96	U	0.98	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.48	U	0.49	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.96	U	0.98	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.96	U	0.98	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.48	U	0.49	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	14		15		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	17		18		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	130		150		14	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	7.2		7.8		8	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	460		390		16	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.91	U	0.92	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.45	U	0.46	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.96	U	0.98	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.4	J	1.5	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.2	J	1.5	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.96	U	0.98	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.96	U	0.98	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.96	U	0.98	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.96	U	0.98	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.4	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.8	U	4.9	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.9	U	3.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.48	U	0.49	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	58	U	59	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.4	U	6.5	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.4	U	6.5	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3	U	3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.5	U	8.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	30	U	30	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	30	U	30	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	29		31		7	
				Perfluoropentanoic acid (PFPeA) (NG/L)	110		110		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	100		100		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	57		61		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	100		110		10	
				Perfluorononanoic acid (PFNA) (NG/L)	21		22		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.94	U	0.3	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.94	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.94	U	0.93	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	57		56		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	100		98		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	750		730		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	25		25		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1100		1100		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.88	U	0.88	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.44	U	0.44	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.94	U	0.93	U	NC	
C3Y3233	LORNG_OW05002_10312023	LORNG_OW05002_10312023FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.8	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	92		89		3	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5.9		5	J	17	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.2		2.4		9	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.94	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.94	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.94	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.94	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.7	U	4.7	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.5	U	NC	

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Data Validation and Usability Report
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SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.47	U	0.47	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	56	U	56	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.2	U	6.1	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.2	U	6.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.9	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.2	U	8.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	29	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	29	U	29	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	76		77		1	
				Perfluoropentanoic acid (PFPeA) (NG/L)	280		280		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	330		330		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	110		110		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	390		400		3	
				Perfluorononanoic acid (PFNA) (NG/L)	16		15		6	
				Perfluorodecanoic acid (PFDA) (NG/L)	9	U	9.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	4.5	U	4.7	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	9	U	9.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	9	U	9.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	4.5	U	4.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	61		62		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	82		88		7	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1500		1400		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	31		34		9	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1400		1400		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	8.5	U	8.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	4.2	U	4.4	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	9	U	9.3	U	NC	
C3Y5043	LORNG_AA07MW-02_11012023	LORNG_AA07MW-02_11012023FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	26	J	28	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1200		1200		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	78		68		14	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	49		52		6	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	9	U	9.3	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	9	U	9.3	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	9	U	9.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	9	U	9.3	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	23	U	23	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	45	U	47	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	36	U	37	U	NC	

Prepared by: AKN 4/11/24
Checked by: JAR 4/15/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	34	U	36	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	18	U	19	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.5	U	4.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	540	U	560	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	60	U	62	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	60	U	62	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	28	U	29	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	79	U	82	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	280	U	290	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	280	U	290	U	NC	
C3Y8381	LORNG_JBW7327_45_11022023	LORNG_JBW7327_45_11022023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6.6		6.6		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	14		14		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	32		32		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.4		5.1		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.4		8.1		9	
				Perfluorononanoic acid (PFNA) (NG/L)	0.36	J	0.41	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.92	U	0.92	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.92	U	0.92	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.92	U	0.92	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.6		1.6		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	19		18		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.43	U	0.21	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	5.7		6.2		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.87	U	0.86	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.43	U	0.43	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.92	U	0.92	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	4.9	J	5.2	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	930		1100		17	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5.3	J	4.7	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.23	U	0.23	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.92	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.92	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.92	U	0.92	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.92	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.6	U	4.6	U	NC	

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SDGs C3X5422-C3Z4689
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.46	U	0.46	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	55	U	55	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.1	U	6.1	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.1	U	6.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.9	U	2.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.1	U	8.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	29	U	28	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	29	U	28	U	NC	
C3Y8410	LORNG_BW01008_11022023	LORNG_BW01008_11022023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.9	J	5.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	17		16		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	24		23		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.8		6.7		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	28		26		7	
				Perfluorononanoic acid (PFNA) (NG/L)	1	J	1.1	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.98	U	0.95	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.49	U	0.47	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.98	U	0.95	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.98	U	0.95	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.49	U	0.47	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.7		3.3		11	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	5.1		4.7		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	110		110		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.2	J	1.4	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	57		60		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.92	U	0.89	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.46	U	0.45	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.98	U	0.95	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.24	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.98	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.98	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.98	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.98	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.4	U	NC	

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SDGs C3X5422-C3Z4689
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.9	U	4.7	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.9	U	3.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.49	U	0.47	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	59	U	57	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.5	U	6.3	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.5	U	6.3	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.6	U	8.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	30	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	30	U	29	U	NC	
C3Y8410	LORNG_OW05003_11022023	LORNG_OW05003_11022023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	17		18		6	
				Perfluoropentanoic acid (PFPeA) (NG/L)	58		60		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	34		34		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	27		28		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	27		29		7	
				Perfluorononanoic acid (PFNA) (NG/L)	8.6		9.6		11	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.91	U	0.93	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.91	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.91	U	0.93	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.46	U	0.46	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	11		12		9	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	20		21		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	210		220		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	12		12		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	670		660		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	U	0.87	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.43	U	0.44	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.91	U	0.93	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	14		16		13	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.5	U	3.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.23	U	0.23	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.91	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.91	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.91	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.91	U	0.93	U	NC	

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SDGs C3X5422-C3Z4689
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.6	U	4.6	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.7	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.46	U	0.46	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	55	U	56	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6	U	6.1	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6	U	6.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.8	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8	U	8.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	28	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	28	U	29	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

NG/L = nanograms per liter

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

APRIL 15, 2024

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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April 15, 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
%	percent
7:3 FTCA	3-perfluoroheptyl propanoic acid
Bureau Veritas	Bureau Veritas Canada
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
EtFOSA	ethyl perfluorooctanesulfonamide
EtFOSE	ethyl perfluorooctanesulfonamidoethanol
FTS	fluorotelomersulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MeFOSA	methyl perfluorooctanesulfonamide
MeFOSE	methyl perfluorooctanesulfonamidoethanol
MS	matrix spike
MSD	matrix spike duplicate
ng/L	nanograms per liter
NIS	non-extracted internal standard
PFAS	per- and polyfluoroalkyl substances
PFHpS	perfluoroheptanesulfonic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFPeA	perfluoropentanoic acid
PFTeDA	perfluorotetradecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 36 aqueous samples, including 7 equipment blanks and 5 field duplicates, between 24 and 30 October 2023 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to Bureau Veritas Canada (Bureau Veritas), located in Mississauga, Ontario, Canada, where they were received on 27 October and 1 November 2023 and assigned to job numbers C3X7141 and C3Y1725. Bureau Veritas analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 4 validation on 100 percent (%) of the field samples in job numbers C3X7141 and C3Y1725. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and review of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks;

- Confirmation of analyte identification and quantification using the raw analytical data; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J The reported result was an estimated value.

J+ The reported result was an estimated value with a positive bias.

J- The reported result was an estimated value with a negative bias.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

U The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.

UJ The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISL Low EIS recovery.

IAG Transition ion ratio is outside of expected limits.

LBL The analyte was detected in the associated laboratory blank, and the concentration detected in the sample was less than the LOQ.

TH8 Elevated sample receipt temperature.

TR The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius (°C), with the following exception:

- Bureau Veritas only signed page 1 of the COCs for report numbers C3X7141 and C3Y1725. The remaining pages had notes that said, “See page 1”. No data were qualified based on the missing signatures.
- The recorded receipt temperatures for the samples in report number C3X7141 were high, ranging between 7.2 and 7.8 °C. Per the DoD Data Validation Guidelines, WSP J qualified the detected and UJ qualified the non-detected PFAS results from samples LORNG_CBW02_10252023, LORNG_JBW7341B_10252023, LORNG_JBW7734_10252023, LORNG_JBW7734_10252023FD, LORNG_JMW-0406_10252023, LORNG_JMW0991_10242023, LORNG_LF2MW2_10242023, LORNG_MMW0018B_10242023,

LORNG_OW02002_10242023, LORNG_OW05004_10242023, LORNG_OW14004_10252023, LORNG_OW20006_10252023, LORNG_OW24001_10252023, LORNG_RFW1144_10252023, LORNG_UNK-042_10242023, LORNG_USGS2_40_10252023, and LORNG_USGS2_125_10252023 because of the elevated sample receipt temperatures. (J/UJ, TH8)

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.15.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

According to the laboratory's notes, the analytical instrument underwent mass calibration to the instrument's manufacturer's specifications and using the manufacturer's recommended standard less than a year before the samples reviewed in this report were analyzed.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

Bureau Veritas quantified perfluorotridecanoic acid using the EIS $^{13}C_2$-perfluorotetradecanoic acid (PFTeDA) instead of the average of the EISs $^{13}C_2$-perfluorododecanoic acid and $^{13}C_2$-PFTeDA, as specified by EPA Method 1633. WSP did not qualify any data based on the method deviation.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.7 BILE SALT INTERFERNCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory and equipment blanks associated with the samples reviewed in this report, with the following exceptions:

- Perfluorooctanesulfonamide (PFOSA [0.14 nanograms per liter {ng/L}]), methyl perfluorooctanesulfonamidoethanol (MeFOSE [2.4 ng/L]), ethyl perfluorooctanesulfonamidoethanol (EtFOSE [2.7 ng/L]), and 3-perfluoroheptylpropanoic acid (7:3 FTCA [17 ng/L]) were detected in the laboratory blank associated with the extraction of samples LORNG_BW01009_10302023, LORNG_BW10008_10302023, LORNG_JMW0880_10302023, LORNG_JMW0882_10302023, LORNG_JMW0882_10302023FD, LORNG_JMW0980_10302023, LORNG_JMW0982_10302023, LORNG_JMW0982_10302023FD, and LORNG_JMW1684_10302023. Data limitations are summarized below.
    - WSP U qualified the PFOSA, EtFOSE, and 7:3 FTCA results from sample LORNG_JMW0880_10302023 at the LODs of 0.26 ng/L, 5.2 ng/L, and 32 ng/L, respectively, because the concentrations detected in the sample were less than the LODs. (U, LBL)
    - WSP U qualified the PFOSA result from samples LORNG_JMW0882_10302023 and LORNG_JMW0882_10302023FD and the MeFOSE result from sample LORNG_JMW0880_10302023 because the concentrations detected in the samples were less than the LOQ. (U, LBL)
    - PFOSA, MeFOSE, EtFOSE, and 7:3 FTCA either were not detected in the remaining associated samples or the detected concentrations were greater than or equal to both the LOQ and five times the concentrations detected in the blank. Data usability is not adversely affected by the blank detections.
- PFOS was detected at a concentration of 0.81 ng/L in equipment blank LORNG_EB013_10242023, associated with samples LORNG_BW13003_10242023, LORNG_BW13003_10242023FD, and LORNG_MMW0004_10242023. The associated samples were not reviewed during this validation and the blank detection is addressed in the validation report containing the associated field samples.
- PFOS was detected at a concentration of 0.57 ng/L in equipment blank LORNG_EB021_10202023, associated with samples LORNG_JMW0980_10302023, LORNG_JMW0982_10302023, LORNG_JMW0982_10302023FD, LORNG_JMW1684_10302023, and LORNG_JMW1684_10302023FD. PFOS concentration detected in the associated samples were greater than both the LOQ and five times the concentration detected in the blank. Data usability is not adversely affected by the blank detection.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

Low level LCS (LLCS) and LCS were included with each extraction batch, (LLCS) spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

Bureau Veritas performed MS and MSD analyses on samples LORNG_CBW02_10252023, LORNG_JMW0880_10302023, LORNG_JMW0991_10242023, and LORNG_OW05004_10242023. MS and MSD recoveries were within the QAPP-specified LCS limits and RPDs between MS and MSD results were less than 30%.

7.1.11 DUPLICATE PRECISION

Bureau Veritas did not perform duplicate analyses on the samples reviewed in this report.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries were within the QAPP-specified 20 to 150% interim limits, with the following exceptions:

- Recoveries of the EISs $^{13}C_2$-4:2 fluorotelomersulfonic acid (FTS [162%]), D_3-methyl perfluorooctanesulfonamide (MeFOSA [11%]), and D_5-ethyl perfluorooctanesulfonamide (EtFOSA [6.8%]) were outside of limits in sample LORNG_CBW02_10252023. Data limitations are summarized below.
  - Based on professional judgement, WSP R qualified and rejected the non-detected EtFOSA result from this sample because of the extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detected MeFOSA result from this sample because of the low EIS recovery. (UJ, EISL)
  - 4:2 FTS was not detected in this sample and data usability is not adversely affected by the high EIS recovery.
- Recoveries of the EIS $^{13}C_2$-4:2 FTS were high in samples LORNG_JMW0882_10302023 (172%), LORNG_JMW0882_10302023FD (155%), and LORNG_OW14004_10252023 (152%,). 4:2 FTS was not detected in these samples and data usability is not adversely affected by the high EIS recoveries.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.14 STAGE 4 VALIDATION

WSP performed Stage 4 validation on all field samples reviewed in this report. Data quality was acceptable, with appropriate manual integrations, correct target analyte identification, and correct quantification.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

During Stage 4 validation, WSP compared ion ratios for detections in field samples against both the ion ratios from the midpoint calibration standard, for analytes with detected concentrations greater than the LOQ, and the opening midpoint CCV, for analytes with detected concentrations less than the LOQ. Ion ratios were within the method-specified 50 to 150% limits with the following exceptions, where results were J qualified because the ion ratios were outside of limits (J, IAG), unless otherwise specified:

- Perfluoropentanoic acid (PFPeA) in samples LORNG_CBW02_10252023 and LORNG_JMW0882_10302023,
- Perfluoroheptanesulfonic acid (PFHpS) in sample LORNG_OW14004_10252023,
- PFHpS and PFOSA in sample LORNG_RFW1144_10252023,
- PFOSA in samples LORNG_BW01009_10302023, LORNG_JBW7341B_10252023, LORNG_JMW0980_10302023, LORNG_JMW0982_10302023, LORNG_JMW0982_10302023FD, and LORNG_USGS2_40_10252023, and
- The PFOSA result from sample LORNG_JMW0882_10302023 was previously U qualified at the detected concentration and WSP UJ qualified the result because the ion ratio was outside of expected limits.

According to Bureau Veritas' notes, the ion ratio for PFPeA was outside of expected limits in sample LORNG_BW10008_10302023. The ion ratio of PFPeA was within limits and WSP did not qualify this result.

According to Bureau Veritas' notes, the ion ratio for PFOS was outside of expected limits in sample LORNG_OW14004_10252023. The ion ratio of PFOS was within limits and WSP did not qualify this result.

According to Bureau Veritas' notes, the signal to noise ratio for the PFPeA detection in sample LORNG_JMW0982_10302023 did not meet method-specified minimum criteria. Signal to noise ratios for both the primary and confirmation met method specified minimum criteria and WSP did not qualify this result.

Bureau Veritas J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Eurofins' J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_JBW7348_10302023, LORNG_JBW7734_10252023, LORNG_JMW0882_10302023, LORNG_JMW0982_10302023, and LORNG_JMW1684_10302023. Precision between primary and field duplicate results was acceptable, with RPDs less than 30% or differences between concentrations less than the average LOQ. Detections in the field duplicate pairs are summarized in Table 4.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 1,160 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 1 record (0.09%) due to extremely low EIS recovery.
- J or UJ: WSP J or UJ qualified 745 records (64%) due to elevated sample receipt temperatures, low EIS recovery, detections in the associated laboratory blanks, transition ion ratios outside of expected limits, and/or detected concentrations less than the LOQ.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLES

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3X7141	CBW02	LORNG_CBW02_10252023	XKX097	10/25/2023	WG	N	40
	FIELDQC	LORNG_EB013_10242023	XKX089	10/24/2023	WQ	EB	40
		LORNG_EB014_10242023	XKX090	10/24/2023	WQ	EB	40
		LORNG_EB015_10242023	XKX091	10/24/2023	WQ	EB	40
		LORNG_EB016_10252023	XKX103	10/25/2023	WQ	EB	40
	JBW7341B	LORNG_JBW7341B_10252023	XKX098	10/25/2023	WG	N	40
	JBW7734	LORNG_JBW7734_10252023	XKX099	10/25/2023	WG	N	40
		LORNG_JBW7734_10252023FD	XKX100	10/25/2023	WG	FD	40
	JMW-0406	LORNG_JMW-0406_10252023	XKX101	10/25/2023	WG	N	40
	JMW0991	LORNG_JMW0991_10242023	XKX084	10/24/2023	WG	N	40
	LF2MW2	LORNG_LF2MW2_10242023	XKX092	10/24/2023	WG	N	40
	MMW0018B	LORNG_MMW0018B_10242023	XKX085	10/24/2023	WG	N	40
	OW02002	LORNG_OW02002_10242023	XKX086	10/24/2023	WG	N	40
	OW05004	LORNG_OW05004_10242023	XKX087	10/24/2023	WG	N	40
	OW14004	LORNG_OW14004_10252023	XKX093	10/25/2023	WG	N	40
	OW20006	LORNG_OW20006_10252023	XKX104	10/25/2023	WG	N	40
	OW24001	LORNG_OW24001_10252023	XKX094	10/25/2023	WG	N	40
	RFW1144	LORNG_RFW1144_10252023	XKX102	10/25/2023	WG	N	40
	UNK-042	LORNG_UNK-042_10242023	XKX088	10/24/2023	WG	N	40
	USGS2	LORNG_USGS2_125_10252023	XKX095	10/25/2023	WG	N	40
		LORNG_USGS2_40_10252023	XKX096	10/25/2023	WG	N	40
C3Y1725	BW01009	LORNG_BW01009_10302023	XLY345	10/30/2023	WG	N	40
	BW10008	LORNG_BW10008_10302023	XLY346	10/30/2023	WG	N	40
	FIELDQC	LORNG_EB019_10302023	XLY354	10/30/2023	WQ	EB	40
		LORNG_EB020_10302023	XLY370	10/30/2023	WQ	EB	40
		LORNG_EB021_10302023	XLY371	10/30/2023	WQ	EB	40
	JBW7348	LORNG_JBW7348_10302023	XLY372	10/30/2023	WG	N	40
		LORNG_JBW7348_10302023FD	XLY373	10/30/2023	WG	FD	40
	JMW0880	LORNG_JMW0880_10302023	XLY347	10/30/2023	WG	N	40
	JMW0882	LORNG_JMW0882_10302023	XLY348	10/30/2023	WG	N	40
		LORNG_JMW0882_10302023FD	XLY349	10/30/2023	WG	FD	40
	JMW0980	LORNG_JMW0980_10302023	XLY350	10/30/2023	WG	N	40
	JMW0982	LORNG_JMW0982_10302023	XLY351	10/30/2023	WG	N	40
		LORNG_JMW0982_10302023FD	XLY352	10/30/2023	WG	FD	40
	JMW1684	LORNG_JMW1684_10302023	XLY353	10/30/2023	WG	N	40
		LORNG_JMW1684_10302023FD	XLY374	10/30/2023	WG	FD	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

		SDG		C3X7141															
		Location		CBW02	FIELDQC				JBW7341B	JBW7734		JMW-0406	JMW0991	LF2MW2	MMW0018B	OW02002	OW05004	OW14
		Sample Date		10/25/2023	10/24/2023			10/25/2023	10/25/2023	10/25/2023		10/25/2023	10/24/2023	10/24/2023	10/24/2023	10/24/2023	10/24/2023	10/25/
		Sample ID		LORNG_CBW02_10252023	LORNG_EB013_10242023	LORNG_EB014_10242023	LORNG_EB015_10242023	LORNG_EB016_10252023	LORNG_JBW7341B_10252023	LORNG_JBW7734_10252023	LORNG_JBW7734_10252023FD	LORNG_JMW-0406_10252023	LORNG_JMW0991_10242023	LORNG_LF2MW2_10242023	LORNG_MMW0018B_10242023	LORNG_OW02002_10242023	LORNG_OW05004_10242023	LORNG_O_1025
		QC Code		N	EB	EB	EB	EB	N	N	FD	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.8 J	1.8 U	1.8 U	1.8 U	1.9 U	6.6 J	5.5 J	5.6 J	3.6 J	1.4 J	0.77 J	1.9 UJ	0.98 J	4.1 J	13
		Perfluoropentanoic acid (PFPeA)	NG/L	1.2 J	0.45 U	0.45 U	0.46 U	0.48 U	14 J	7.9 J	7.9 J	4.9 J	1.6 J	0.53 J	0.47 UJ	0.55 J	8.3 J	22
		Perfluorohexanoic acid (PFHxA)	NG/L	2.1 J	0.45 U	0.45 U	0.46 U	0.48 U	20 J	9.3 J	9.4 J	3.7 J	2.8 J	0.9 J	0.47 UJ	0.91 J	5.3 J	27
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.9 J	0.45 U	0.45 U	0.46 U	0.48 U	7.6 J	7.2 J	6.5 J	3.9 J	1 J	0.51 J	0.47 UJ	0.36 J	7.7 J	14
		Perfluorooctanoic acid (PFOA)	NG/L	1.2 J	0.23 U	0.23 U	0.23 U	0.24 U	24 J	8 J	8.2 J	4.2 J	5.6 J	2.6 J	0.24 J	2.1 J	4.6 J	39
		Perfluorononanoic acid (PFNA)	NG/L	0.38 J	0.45 U	0.45 U	0.46 U	0.48 U	1.4 J	1 J	0.94 J	2.9 J	0.22 J	0.15 J	0.47 UJ	0.19 J	1.6 J	0.46
		Perfluorodecanoic acid (PFDA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.44 J	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.41 J	0.91
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.46 UJ	0.45 U	0.45 U	0.46 U	0.48 U	0.47 UJ	0.45 UJ	0.48 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.46
		Perfluorododecanoic acid (PFDoA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.46 UJ	0.45 U	0.45 U	0.46 U	0.48 U	0.47 UJ	0.45 UJ	0.48 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.46
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.75 J	0.4 U	0.4 U	0.4 U	0.43 U	3.1 J	3.2 J	3.2 J	1.5 J	0.51 J	0.45 J	0.41 UJ	0.44 J	2.1 J	5.4
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.44 J	0.43 U	0.43 U	0.43 U	0.46 U	4.3 J	4.9 J	5 J	2.3 J	0.42 J	0.36 J	0.44 UJ	0.34 J	2.7 J	5.6
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	8 J	0.43 U	0.43 U	0.43 U	0.46 U	140 J	62 J	63 J	44 J	6.7 J	5.5 J	0.65 J	5.5 J	28 J	86
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.44 UJ	0.43 U	0.43 U	0.43 U	0.46 U	1 J	1.8 J	1.8 J	0.84 J	0.43 UJ	0.43 UJ	0.44 UJ	0.43 UJ	0.63 J	0.15
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6.8 J	0.81 J	0.43 U	0.43 U	0.46 U	71 J	90 J	87 J	73 J	13 J	4.6 J	2.9 J	7.6 J	72 J	5.6
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.87 UJ	0.85 U	0.85 U	0.86 U	0.91 U	0.88 UJ	0.86 UJ	0.91 UJ	0.87 UJ	0.87 UJ	0.85 UJ	0.88 UJ	0.85 UJ	0.83 UJ	0.86
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.44 UJ	0.43 U	0.43 U	0.43 U	0.46 U	0.44 UJ	0.43 UJ	0.46 UJ	0.43 UJ	0.43 UJ	0.43 UJ	0.44 UJ	0.43 UJ	0.42 UJ	0.43
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.8 UJ	1.7 U	1.7 U	1.7 U	1.8 U	1.8 UJ	1.7 UJ	1.8 UJ	1.8 UJ	1.7 UJ	1.7 UJ	1.8 UJ	1.7 UJ	1.7 UJ	1.7
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.8 UJ	1.7 U	1.7 U	1.7 U	1.8 U	1.8 UJ	1.7 UJ	1.8 UJ	0.87 J	1.7 UJ	1.7 UJ	1.8 UJ	1.7 UJ	0.83 J	1.7
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.5 UJ	3.5 U	3.4 U	3.5 U	3.7 U	3.6 UJ	3.5 UJ	3.7 UJ	3.5 UJ	3.5 UJ	3.4 UJ	3.6 UJ	3.4 UJ	3.4 UJ	3.5
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.23 UJ	0.23 U	0.23 U	0.23 U	0.24 U	3 J	0.5 J	0.39 J	0.77 J	0.28 J	0.23 UJ	0.23 UJ	0.23 UJ	0.32 J	0.23
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.93 R	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.93 UJ	0.91 U	0.91 U	0.91 U	0.97 U	0.94 UJ	0.91 UJ	0.97 UJ	0.92 UJ	0.92 UJ	0.91 UJ	0.93 UJ	0.91 UJ	0.88 UJ	0.91
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3 UJ	2.3 U	2.3 U	2.3 U	2.4 U	2.3 UJ	2.3 UJ	2.4 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.2 UJ	2.3
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	6.9 J	4.5 U	4.5 U	4.6 U	4.8 U	4.7 UJ	4.5 UJ	4.8 UJ	4.6 UJ	4.6 UJ	4.5 UJ	4.7 UJ	4.5 UJ	4.4 UJ	4.6
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.7 UJ	3.6 U	3.6 U	3.7 U	3.9 U	3.7 UJ	3.6 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.6 UJ	3.7 UJ	3.6 UJ	3.5 UJ	3.6
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.5 UJ	3.5 U	3.4 U	3.5 U	3.7 U	3.6 UJ	3.5 UJ	3.7 UJ	3.5 UJ	3.5 UJ	3.4 UJ	3.6 UJ	3.4 UJ	3.4 UJ	3.5
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 UJ	1.8 U	1.8 U	1.8 U	1.9 U	1.9 UJ	1.8 UJ	1.9 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.9 UJ	1.8 UJ	1.8 UJ	1.8
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.46 UJ	0.45 U	0.45 U	0.46 U	0.48 U	0.47 UJ	0.45 UJ	0.48 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.47 UJ	0.45 UJ	0.44 UJ	0.46
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	56 UJ	55 U	54 U	55 U	58 U	56 UJ	55 UJ	58 UJ	55 UJ	55 UJ	54 UJ	56 UJ	54 UJ	53 UJ	55
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.1 UJ	6 U	6 U	6 U	6.4 U	6.2 UJ	6 UJ	6.4 UJ	6.1 UJ	6.1 UJ	6 UJ	6.2 UJ	6 UJ	5.8 UJ	6
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.1 UJ	6 U	6 U	6 U	6.4 U	6.2 UJ	6 UJ	6.4 UJ	6.1 UJ	6.1 UJ	6 UJ	6.2 UJ	6 UJ	5.8 UJ	6
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.9 UJ	2.8 U	2.8 U	2.8 U	3 U	2.9 UJ	2.8 UJ	3 UJ	2.9 UJ	2.9 UJ	2.8 UJ	2.9 UJ	2.8 UJ	2.7 UJ	2.8
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.1 UJ	8 U	8 U	8 U	8.5 U	8.2 UJ	8 UJ	8.5 UJ	8.1 UJ	8.1 UJ	8 UJ	8.2 UJ	8 UJ	7.8 UJ	8
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	29 UJ	28 U	28 U	28 U	30 U	29 UJ	28 UJ	30 UJ	29 UJ	29 UJ	28 UJ	29 UJ	28 UJ	27 UJ	28
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	29 UJ	28 U	28 U	28 U	30 U	29 UJ	28 UJ	30 UJ	29 UJ	29 UJ	28 UJ	29 UJ	28 UJ	27 UJ	28

Notes:

N = Normal Field Sample

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

| | | | | SDG | C3X7141 | | | |

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

		SDG		C3X7141							C3Y1725							
		Location	004	OW20006	OW24001	RFW1144	UNK-042	USGS2		BW01009	BW10008	FIELDQC			JBW7348		JMW0880
		Sample Date	2023	10/25/2023	10/25/2023	10/25/2023	10/24/2023	10/25/2023		10/30/2023	10/30/2023	10/30/2023			10/30/2023		10/30/2023
		Sample ID	W14004 2023	LORNG_OW20006_10252023	LORNG_OW24001_10252023	LORNG_RFW1144_10252023	LORNG_UNK-042_10242023	LORNG_USGS2_40_10252023	LORNG_USGS2_125_10252023	LORNG_BW01009_10302023	LORNG_BW10008_10302023	LORNG_EB019_10302023	LORNG_EB020_10302023	LORNG_EB021_10302023	LORNG_JBW7348_10302023	LORNG_JBW7348_10302023FD	LORNG_JMW0880_10302023
		QC Code		N	N	N	N	N	N	N	N	EB	EB	EB	N	FD	N
Class	Fraction	Analyte Name	Units	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	J	9.7 J	6.5 J	9.8 J	7.6 J	11 J	10 J	17	1.4 J	2 U	2 U	1.9 U	3.3 J	3.3 J	2.2 J
		Perfluoropentanoic acid (PFPeA)	NG/L	J	21 J	14 J	18 J	23 J	19 J	17 J	47	1.9 J	0.51 U	0.51 U	0.47 U	5.4	5.3	1.3 J
		Perfluorohexanoic acid (PFHxA)	NG/L	J	21 J	7 J	11 J	21 J	17 J	11 J	45	3.7	0.51 U	0.51 U	0.47 U	6.4	6.3	2.3
		Perfluoroheptanoic acid (PFHpA)	NG/L	J	21 J	3.3 J	7 J	9.5 J	7.4 J	6.4 J	28	0.7 J	0.51 U	0.51 U	0.47 U	4.4	4.2	1 J
		Perfluorooctanoic acid (PFOA)	NG/L	J	24 J	1.8 J	7.4 J	17 J	21 J	9.5 J	40	1.1 J	0.26 U	0.25 U	0.23 U	6	5.6	5.2
		Perfluorononanoic acid (PFNA)	NG/L	J	2.3 J	0.46 UJ	0.54 J	0.93 J	0.72 J	0.55 J	2.6	0.49 U	0.51 U	0.51 U	0.47 U	0.43 J	0.5 J	0.49 J
		Perfluorodecanoic acid (PFDA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	UJ	0.49 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.46 UJ	0.45 UJ	0.51 U	0.49 U	0.51 U	0.51 U	0.47 U	0.44 U	0.47 U	0.52 U
		Perfluorododecanoic acid (PFDoA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	UJ	0.49 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.46 UJ	0.45 UJ	0.51 U	0.49 U	0.51 U	0.51 U	0.47 U	0.44 U	0.47 U	0.52 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	J	3.6 J	0.57 J	2.2 J	4 J	3.1 J	2.1 J	7.2	0.25 J	0.45 U	0.44 U	0.41 U	1.7	1.6	0.56 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	J	5.1 J	0.35 J	2.3 J	4.7 J	3.5 J	2.4 J	8.8	0.25 J	0.48 U	0.47 U	0.44 U	2	2	0.64 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	J	110 J	5.2 J	32 J	74 J	53 J	32 J	130	2.7	0.48 U	0.47 U	0.44 U	24	24	11
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	J	1.6 J	0.43 UJ	0.47 J	1 J	0.99 J	0.54 J	2.5	0.46 U	0.48 U	0.47 U	0.44 U	0.39 J	0.34 J	0.45 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	J	120 J	3.5 J	34 J	62 J	63 J	38 J	190	0.93 J	0.48 U	0.47 U	0.57 J	25	20	24
		Perfluorononanesulfonic acid (PFNS)	NG/L	UJ	0.91 UJ	0.86 UJ	0.86 UJ	0.84 UJ	0.86 UJ	0.85 UJ	0.97 U	0.93 U	0.96 U	0.95 U	0.88 U	0.83 U	0.88 U	0.98 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	UJ	0.46 UJ	0.43 UJ	0.43 UJ	0.42 UJ	0.43 UJ	0.43 UJ	0.48 U	0.46 U	0.48 U	0.47 U	0.44 U	0.42 U	0.44 U	0.49 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	UJ	1.8 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	2 U	1.9 U	1.9 U	1.9 U	1.8 U	1.7 U	1.8 U	2 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	UJ	1.8 UJ	1.7 UJ	1.7 UJ	1.7 UJ	6 J	3.7 J	28	4.8 J	1.9 U	1.9 U	1.8 U	1.7 U	1.8 U	2 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	UJ	3.7 UJ	3.5 UJ	3.5 UJ	3.4 UJ	1.2 J	3.4 UJ	15	3.8 U	3.9 U	3.8 U	3.5 U	3.4 U	3.6 U	4 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	UJ	1.1 J	0.23 UJ	0.49 J	0.18 J	2.2 J	0.95 J	2.6 J	0.25 U	0.26 U	0.25 U	0.23 U	0.22 U	0.23 U	0.26 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	0.93 J
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	UJ	0.97 UJ	0.92 UJ	0.91 UJ	0.9 UJ	0.92 UJ	0.91 UJ	1 U	0.99 U	1 U	1 U	0.93 U	0.89 U	0.93 U	1.1 J
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	UJ	2.4 UJ	2.3 UJ	2.3 UJ	2.2 UJ	2.3 UJ	2.3 UJ	2.6 U	2.5 U	2.6 U	2.5 U	2.3 U	2.2 U	2.3 U	2.7 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	UJ	4.9 UJ	4.6 UJ	4.6 UJ	4.5 UJ	4.6 UJ	4.5 UJ	5.1 U	4.9 U	5.1 U	5.1 U	4.7 U	4.4 U	4.7 U	5.2 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	UJ	3.9 UJ	3.7 UJ	3.6 UJ	3.6 UJ	3.7 UJ	3.6 UJ	4.1 U	4 U	4.1 U	4 U	3.7 U	3.5 U	3.7 U	4.2 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	UJ	3.7 UJ	3.5 UJ	3.5 UJ	3.4 UJ	3.5 UJ	3.4 UJ	3.9 U	3.8 U	3.9 U	3.8 U	3.5 U	3.4 U	3.6 U	4 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	UJ	1.9 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.8 UJ	2.1 U	2 U	2 U	2 U	1.9 U	1.8 U	1.9 U	2.1 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	UJ	0.49 UJ	0.46 UJ	0.46 UJ	0.45 UJ	0.46 UJ	0.45 UJ	0.51 U	0.49 U	0.51 U	0.51 U	0.47 U	0.44 U	0.47 U	0.52 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	UJ	58 UJ	55 UJ	55 UJ	54 UJ	55 UJ	54 UJ	62 U	59 U	61 U	61 U	56 U	53 U	56 U	62 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	UJ	6.4 UJ	6.1 UJ	6 UJ	5.9 UJ	6 UJ	6 UJ	6.8 U	6.5 U	6.7 U	6.7 U	6.2 U	5.9 U	6.2 U	6.9 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	UJ	6.4 UJ	6.1 UJ	6 UJ	5.9 UJ	6 UJ	6 UJ	6.8 U	6.5 U	6.7 U	6.7 U	6.2 U	5.9 U	6.2 U	6.9 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	UJ	3 UJ	2.9 UJ	2.8 UJ	2.8 UJ	2.8 UJ	2.8 UJ	3.2 U	3.1 U	3.2 U	3.1 U	2.9 U	2.7 U	2.9 U	3.2 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	UJ	8.6 UJ	8.1 UJ	8 UJ	7.9 UJ	8.1 UJ	8 UJ	9 U	8.7 U	9 U	8.9 U	8.2 U	7.8 U	8.2 U	9.2 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	UJ	30 UJ	29 UJ	28 UJ	28 UJ	28 UJ	28 UJ	32 U	31 U	32 U	31 U	29 U	27 U	29 U	32 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	UJ	30 UJ	29 UJ	28 UJ	28 UJ	28 UJ	28 UJ	32 U	31 U	32 U	31 U	29 U	27 U	29 U	32 U

Notes:

N = Normal Field Sample

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

Prepared by: AKN
Date: 4/16/24
Checked by: JAR
Date: 4/16/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

			SDG	C3Y1725										
			Location	JMW0882		JMW0980		JMW0982			JMW1684			
			Sample Date	10/30/2023		10/30/2023		10/30/2023			10/30/2023			
			Sample ID	LORNG_JMW0882_10302023	LORNG_JMW0882_10302023FD	LORNG_JMW0980_10302023		LORNG_JMW0982_10302023	LORNG_JMW0982_10302023FD		LORNG_JMW1684_10302023	LORNG_JMW1684_10302023FD		
			QC Code	N	FD	N		N	FD		N	FD		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.6	J	2.6	J	4.7	J	0.91	J	0.95	J	4.9	J	5.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.5	J	1.5	J	3	J	1.7	J	1.6	J	8.1		8.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	3.4		3.5		11		3.6		3.7		8.2		8.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.6		1.6		4.2		1.3	J	1.3	J	5.6		5.5	
		Perfluorooctanoic acid (PFOA)	NG/L	13		13		25		4.8		4.8		5.9		5.8	
		Perfluorononanoic acid (PFNA)	NG/L	0.69	J	0.75	J	0.5	U	0.7	J	0.76	J	0.56	J	0.62	J
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.51	U	0.49	U	0.5	U	0.52	U	0.52	U	0.5	U	0.48	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.51	U	0.49	U	0.5	U	0.52	U	0.52	U	0.5	U	0.48	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.75	J	0.74	J	2.4		0.25	J	0.3	J	3		2.9	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.84	J	1	J	2.6		0.48	J	0.35	J	3.8		3.7	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	15		15		13		10		9.2		36		36	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.8	J	0.74	J	1.2	J	0.47	J	0.25	J	0.7	J	0.65	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	51		46		61		35		33		44		43	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.95	U	0.92	U	0.95	U	0.97	U	0.97	U	0.95	U	0.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.48	U	0.46	U	0.47	U	0.49	U	0.48	U	0.47	U	0.45	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1	J	3	J	3.2	J	1.9	U	1.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.9	U	3.7	U	3.8	U	3.9	U	3.9	U	3.8	U	3.6	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.38	UJ	0.3	U	2.5	J	1.7	J	1.6	J	0.25	U	0.24	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	0.98	U	1	U	1	U	1	U	1	U	0.95	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	0.98	U	1	U	3		3.6		1	U	0.95	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	5.8		4.3		5.4		1	U	1	U	1	U	0.95	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.4	U	2.5	U	2.6	U	2.6	U	2.5	U	2.4	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5.1	U	4.9	U	5	U	5.2	U	5.2	U	5	U	4.8	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4.1	U	3.9	U	4	U	4.1	U	4.1	U	4	U	3.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U	3.7	U	3.8	U	3.9	U	3.9	U	3.8	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2.1	U	2.1	U	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.51	U	0.49	U	0.5	U	0.52	U	0.52	U	0.5	U	0.48	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	61	U	59	U	61	U	62	U	62	U	61	U	57	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.7	U	6.5	U	6.7	U	6.8	U	6.8	U	6.7	U	6.3	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.7	U	6.5	U	6.7	U	6.8	U	6.8	U	6.7	U	6.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3	U	3.1	U	3.2	U	3.2	U	3.1	U	3	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.9	U	8.6	U	8.9	U	9.1	U	9.1	U	8.9	U	8.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	30	U	31	U	32	U	32	U	31	U	30	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	30	U	31	U	32	U	32	U	31	U	30	U

Notes:

N = Normal Field Sample

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

			SDG	C3Y1725															
			Location	JMW0882				JMW0980		JMW0982				JMW1684					
			Sample Date	10/30/2023				10/30/2023		10/30/2023				10/30/2023					
			Sample ID	LORNG_JMW0882_10302023		LORNG_JMW0882_10302023FD		LORNG_JMW0980_10302023		LORNG_JMW0982_10302023		LORNG_JMW0982_10302023FD		LORNG_JMW1684_10302023		LORNG_JMW1684_10302023FD			
			QC Code	N		FD		N		N		FD		N		FD			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		

J- = Concentration is estimated; potential low bias

R = Data are unusable due to serious deficiencies meeting quality control criteria

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX097	LORNG_CBW02_10252023	Perfluorobutanoic acid (PFBA)	4.8	J	4.8	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TH8, IAG, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.1		2.1	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.9	J	0.9	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.38	J	0.38	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.75	J	0.75	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.44	J	0.44	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	8		8	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	6.8		6.8	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.87	U	0.87	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.93	U	0.93	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.93	U	0.93	UJ	TH8, EISL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.93	U	0.93	R	TH8, EISL	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX097	LORNG_CBW02_10252023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.93	U	0.93	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.93	U	0.93	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	6.9	J	6.9	J	TH8, TR	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	56	U	56	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.1	U	6.1	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.1	U	6.1	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L
			XKX098	LORNG_JBW7341B_10252023	Perfluorobutanoic acid (PFBA)	6.6		6.6	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	14		14	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	20		20	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.6		7.6	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	24		24	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.94	U	0.94	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX098	LORNG_JBW7341B_10252023	Perfluoroundecanoic acid (PFUnA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.94	U	0.94	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.1		3.1	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.3		4.3	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	140		140	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	71		71	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.88	U	0.88	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.94	U	0.94	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.6	U	3.6	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3		3	J	TH8, IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.94	U	0.94	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.94	U	0.94	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.94	U	0.94	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.94	U	0.94	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.7	U	4.7	UJ	TH8	NG/L

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SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX098	LORNG_JBW7341B_10252023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.6	U	3.6	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.47	U	0.47	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	56	U	56	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.2	U	6.2	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.2	U	6.2	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.2	U	8.2	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L
					Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.9		7.9	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	9.3		9.3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.2		7.2	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	8		8	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1	J	1	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2		3.2	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.9		4.9	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	62		62	J	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX098	LORNG_JBW7341B_10252023	Perfluoroheptanesulfonic acid (PFHpS)	1.8		1.8	J	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	90		90	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.86	U	0.86	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
			XKX099	LORNG_JBW7734_10252023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.5	J	0.5	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX099	LORNG_JBW7734_10252023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX100	LORNG_JBW7734_10252023FD	Perfluorobutanoic acid (PFBA)	5.6	J	5.6	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.9		7.9	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	9.4		9.4	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	6.5		6.5	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	8.2		8.2	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.94	J	0.94	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.48	U	0.48	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.48	U	0.48	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2		3.2	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	5		5	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	63		63	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8		1.8	J	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	87		87	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.97	U	0.97	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L

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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX100	LORNG_JBW7734_10252023FD	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.7	U	3.7	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.39	J	0.39	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.97	U	0.97	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.97	U	0.97	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.97	U	0.97	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.97	U	0.97	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.4	U	2.4	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.8	U	4.8	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.9	U	3.9	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.7	U	3.7	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.48	U	0.48	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	58	U	58	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.4	U	6.4	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.4	U	6.4	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3	U	3	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.5	U	8.5	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	30	U	30	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	30	U	30	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX101	LORNG_JMW-0406_10252023	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.9		4.9	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	3.7		3.7	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.9		3.9	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	4.2		4.2	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	2.9		2.9	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.44	J	0.44	J	TH8, TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5		1.5	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3		2.3	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	44		44	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.84	J	0.84	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	73		73	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.87	U	0.87	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.92	U	0.92	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.87	J	0.87	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.77	J	0.77	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.92	U	0.92	UJ	TH8	NG/L

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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX101	LORNG_JMW-0406_10252023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.1	U	6.1	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.1	U	6.1	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L
			XKX084	LORNG_JMW0991_10242023	Perfluorobutanoic acid (PFBA)	1.4	J	1.4	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8		2.8	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	1	J	1	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	5.6		5.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.22	J	0.22	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.92	U	0.92	UJ	TH8	NG/L

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Checked by: JAR
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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX084	LORNG_JMW0991_10242023	Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.51	J	0.51	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.42	J	0.42	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	6.7		6.7	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	13		13	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.87	U	0.87	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.92	U	0.92	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.28	J	0.28	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.92	U	0.92	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX084	LORNG_JMW0991_10242023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.1	U	6.1	UJ	TH8	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.1	U	6.1	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L
			XKX092	LORNG_LF2MW2_10242023	Perfluorobutanoic acid (PFBA)	0.77	J	0.77	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.53	J	0.53	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.9	J	0.9	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.51	J	0.51	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.6		2.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.15	J	0.15	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.45	J	0.45	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.36	J	0.36	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	5.5		5.5	J	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX092	LORNG_LF2MW2_10242023	Perfluoroheptanesulfonic acid (PFHpS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	4.6		4.6	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L

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Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX092	LORNG_LF2MW2_10242023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX085	LORNG_MMW0018B_10242023	Perfluorobutanoic acid (PFBA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	0.24	J	0.24	J	TH8, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.93	U	0.93	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.47	U	0.47	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.41	U	0.41	UJ	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.65	J	0.65	J	TH8, TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9		2.9	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.88	U	0.88	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.93	U	0.93	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX085	LORNG_MMW0018B_10242023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.6	U	3.6	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.93	U	0.93	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.93	U	0.93	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.93	U	0.93	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.93	U	0.93	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.7	U	4.7	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.6	U	3.6	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.47	U	0.47	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	56	U	56	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.2	U	6.2	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.2	U	6.2	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.2	U	8.2	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX086	LORNG_OW02002_10242023	Perfluorobutanoic acid (PFBA)	0.98	J	0.98	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.55	J	0.55	J	TH8, TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.91	J	0.91	J	TH8, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.36	J	0.36	J	TH8, TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.1		2.1	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.19	J	0.19	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.44	J	0.44	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.34	J	0.34	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	5.5		5.5	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	7.6		7.6	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L

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SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX086	LORNG_OW02002_10242023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX087	LORNG_OW05004_10242023	Perfluorobutanoic acid (PFBA)	4.1	J	4.1	J	TH8, TR	NG/L
					Perfluoropentanoic acid (PFPeA)	8.3		8.3	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	5.3		5.3	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.7		7.7	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	4.6		4.6	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	1.6		1.6	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.41	J	0.41	J	TH8, TR	NG/L

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Table 3
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Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX087	LORNG_OW05004_10242023	Perfluoroundecanoic acid (PFUnA)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.88	U	0.88	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.88	U	0.88	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.44	U	0.44	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1		2.1	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7		2.7	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	28		28	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.63	J	0.63	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	72		72	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.83	U	0.83	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.88	U	0.88	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.83	J	0.83	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.88	U	0.88	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.88	U	0.88	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.88	U	0.88	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.88	U	0.88	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.2	U	2.2	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.4	U	4.4	UJ	TH8	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX087	LORNG_OW05004_10242023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.5	U	3.5	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.44	U	0.44	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	53	U	53	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.8	U	5.8	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.8	U	5.8	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.7	U	2.7	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.8	U	7.8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	27	U	27	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	27	U	27	UJ	TH8	NG/L
			XKX093	LORNG_OW14004_10252023	Perfluorobutanoic acid (PFBA)	13		13	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	22		22	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	27		27	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	14		14	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	39		39	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.46	J	0.46	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	5.4		5.4	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	5.6		5.6	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	86		86	J	TH8	NG/L

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SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX093	LORNG_OW14004_10252023	Perfluoroheptanesulfonic acid (PFHpS)	0.15	J	0.15	J	TH8, IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	5.6		5.6	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.86	U	0.86	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L

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Checked by: JAR
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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX093	LORNG_OW14004_10252023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX104	LORNG_OW20006_10252023	Perfluorobutanoic acid (PFBA)	9.7		9.7	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	21		21	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	21		21	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	21		21	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	24		24	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	2.3		2.3	J	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.49	U	0.49	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.97	U	0.97	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.49	U	0.49	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.6		3.6	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	5.1		5.1	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	110		110	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6		1.6	J	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	120		120	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.97	U	0.97	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.8	U	1.8	UJ	TH8	NG/L

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Date:4/16/24
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Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX104	LORNG_OW20006_10252023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.8	U	1.8	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.7	U	3.7	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.1	J	1.1	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.97	U	0.97	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.97	U	0.97	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.97	U	0.97	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.97	U	0.97	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.4	U	2.4	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.9	U	4.9	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.9	U	3.9	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.7	U	3.7	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.49	U	0.49	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	58	U	58	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.4	U	6.4	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.4	U	6.4	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3	U	3	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.6	U	8.6	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	30	U	30	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	30	U	30	UJ	TH8	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX094	LORNG_OW24001_10252023	Perfluorobutanoic acid (PFBA)	6.5		6.5	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	14		14	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	7		7	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.3		3.3	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	1.8		1.8	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorodecanoic acid (PFDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TH8, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.35	J	0.35	J	TH8, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	5.2		5.2	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.5		3.5	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.86	U	0.86	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.92	U	0.92	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.23	U	0.23	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.92	U	0.92	UJ	TH8	NG/L

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX094	LORNG_OW24001_10252023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6.1	U	6.1	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.1	U	6.1	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.9	U	2.9	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29	U	29	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29	U	29	UJ	TH8	NG/L
			XKX102	LORNG_RFW1144_10252023	Perfluorobutanoic acid (PFBA)	9.8		9.8	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	18		18	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	7		7	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	7.4		7.4	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.54	J	0.54	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L

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Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX102	LORNG_RFW1144_10252023	Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.2		2.2	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3		2.3	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	32		32	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	J	0.47	J	TH8, IAG, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	34		34	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.86	U	0.86	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.49	J	0.49	J	TH8, IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L

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Checked by: JAR
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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX102	LORNG_RFW1144_10252023	Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX088	LORNG_UNK-042_10242023	Perfluorobutanoic acid (PFBA)	7.6		7.6	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	23		23	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	21		21	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	9.5		9.5	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	17		17	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.93	J	0.93	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.9	U	0.9	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	4		4	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.7		4.7	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	74		74	J	TH8	NG/L

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Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX088	LORNG_UNK-042_10242023	Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	62		62	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.84	U	0.84	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.42	U	0.42	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.9	U	0.9	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.18	J	0.18	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.9	U	0.9	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.2	U	2.2	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.9	U	5.9	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX088	LORNG_UNK-042_10242023	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.9	U	5.9	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	7.9	U	7.9	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L
			XKX095	LORNG_USGS2_125_10252023	Perfluorobutanoic acid (PFBA)	10		10	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	17		17	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	11		11	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	6.4		6.4	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	9.5		9.5	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.55	J	0.55	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.91	U	0.91	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.45	U	0.45	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1		2.1	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.4		2.4	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	32		32	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.54	J	0.54	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	38		38	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.85	U	0.85	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.91	U	0.91	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX095	LORNG_USGS2_125_10252023	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.7	J	3.7	J	TH8, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.95	J	0.95	J	TH8, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.91	U	0.91	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.5	U	4.5	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.6	U	3.6	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.45	U	0.45	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	54	U	54	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8	U	8	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L

Prepared by:AKN
Date:4/16/24
Checked by: JAR
Date: 4/16/24

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX096	LORNG_USGS2_40_10252023	Perfluorobutanoic acid (PFBA)	11		11	J	TH8	NG/L
					Perfluoropentanoic acid (PFPeA)	19		19	J	TH8	NG/L
					Perfluorohexanoic acid (PFHxA)	17		17	J	TH8	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.4		7.4	J	TH8	NG/L
					Perfluorooctanoic acid (PFOA)	21		21	J	TH8	NG/L
					Perfluorononanoic acid (PFNA)	0.72	J	0.72	J	TH8, TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorododecanoic acid (PFDoA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotridecanoic acid (PFTrDA)	0.92	U	0.92	UJ	TH8	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	0.46	U	0.46	UJ	TH8	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.1		3.1	J	TH8	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.5		3.5	J	TH8	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	53		53	J	TH8	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.99	J	0.99	J	TH8, TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	63		63	J	TH8	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.86	U	0.86	UJ	TH8	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.43	U	0.43	UJ	TH8	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	0.92	U	0.92	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.7	U	1.7	UJ	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6		6	J	TH8	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.2	J	1.2	J	TH8, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.2		2.2	J	TH8, IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.92	U	0.92	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X7141	E1633DR	T	XKX096	LORNG_USGS2_40_10252023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.92	U	0.92	UJ	TH8	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.3	U	2.3	UJ	TH8	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	4.6	U	4.6	UJ	TH8	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.7	U	3.7	UJ	TH8	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.5	U	3.5	UJ	TH8	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.8	U	1.8	UJ	TH8	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.46	U	0.46	UJ	TH8	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55	U	55	UJ	TH8	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	6	U	6	UJ	TH8	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6	U	6	UJ	TH8	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.8	U	2.8	UJ	TH8	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.1	U	8.1	UJ	TH8	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28	U	28	UJ	TH8	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	28	U	28	UJ	TH8	NG/L

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y1725	E1633DR	T	XLY345	LORNG_BW01009_10302023	Perfluorooctane sulfonamide (PFOSA)	2.6		2.6	J	IAG	NG/L
			XLY346	LORNG_BW10008_10302023	Perfluorobutanoic acid (PFBA)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.25	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.25	J	0.25	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.93	J	0.93	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.8	J	4.8	J	TR	NG/L
			XLY372	LORNG_JBW7348_10302023	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.43	J	0.43	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.39	J	0.39	J	TR	NG/L
			XLY373	LORNG_JBW7348_10302023FD	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.5	J	0.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.34	J	0.34	J	TR	NG/L
			XLY347	LORNG_JMW0880_10302023	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1	J	1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.49	J	0.49	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.64	J	0.64	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.45	J	0.45	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.26	J	0.26	U	LBL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.93	J	0.93	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.1	J	1.1	J	TR	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y1725	E1633DR	T	XLY347	LORNG_JMW0880_10302023	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.7	J	2.7	U	LBL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	5.2	J	5.2	U	LBL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	32	J	32	U	LBL	NG/L
			XLY348	LORNG_JMW0882_10302023	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.5	J	1.5	J	IAG, TR	NG/L
					Perfluorononanoic acid (PFNA)	0.69	J	0.69	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.75	J	0.75	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.84	J	0.84	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.8	J	0.8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.38	J	0.38	UJ	LBL, IAG	NG/L
			XLY349	LORNG_JMW0882_10302023FD	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.5	J	1.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.75	J	0.75	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.74	J	0.74	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1	J	1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.74	J	0.74	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.3	J	0.3	U	LBL	NG/L
			XLY350	LORNG_JMW0980_10302023	Perfluorobutanoic acid (PFBA)	4.7	J	4.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3	J	3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.5		2.5	J	IAG	NG/L

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Checked by: JAR
Date: 4/16/24

Table 3
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Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3Y1725	E1633DR	T	XLY351	LORNG_JMW0982_10302023	Perfluorobutanoic acid (PFBA)	0.91	J	0.91	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.25	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.48	J	0.48	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.47	J	0.47	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3	J	3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.7	J	1.7	J	IAG	NG/L
			XLY352	LORNG_JMW0982_10302023FD	Perfluorobutanoic acid (PFBA)	0.95	J	0.95	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.76	J	0.76	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.3	J	0.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	0.35	J	0.35	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.25	J	0.25	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.2	J	3.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.6		1.6	J	IAG	NG/L
			XLY353	LORNG_JMW1684_10302023	Perfluorobutanoic acid (PFBA)	4.9	J	4.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.56	J	0.56	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.7	J	0.7	J	TR	NG/L
			XLY374	LORNG_JMW1684_10302023FD	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.62	J	0.62	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.65	J	0.65	J	TR	NG/L

Notes:

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Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs C3X7141 and C3Y1725

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

EISL = Low extracted internal standard recovery

IAG = Transition ion ratio outside limits

LBL = Analyte detected in laboratory blank; concentration in sample is less than LOQ

TH8 = Elevated sample receipt temperature

TR = Analyte concentration is less than LOQ

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Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3X7141	LORNG_JBW7734_10252023	LORNG_JBW7734_10252023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.5	J	5.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.9	J	7.9	J	0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	9.3	J	9.4	J	1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	7.2	J	6.5	J	10	
				Perfluorooctanoic acid (PFOA) (NG/L)	8	J	8.2	J	2	
				Perfluorononanoic acid (PFNA) (NG/L)	1	J	0.94	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.45	UJ	0.48	UJ	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.45	UJ	0.48	UJ	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.2	J	3.2	J	0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.9	J	5	J	2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	62	J	63	J	2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.8	J	0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	90	J	87	J	3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.86	UJ	0.91	UJ	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.43	UJ	0.46	UJ	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.91	UJ	0.97	UJ	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	UJ	1.8	UJ	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.7	UJ	1.8	UJ	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.5	UJ	3.7	UJ	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.5	J	0.39	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.91	UJ	0.97	UJ	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.3	UJ	2.4	UJ	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.5	UJ	4.8	UJ	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.6	UJ	3.9	UJ	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.5	UJ	3.7	UJ	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	UJ	1.9	UJ	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.45	UJ	0.48	UJ	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	55	UJ	58	UJ	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6	UJ	6.4	UJ	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6	UJ	6.4	UJ	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.8	UJ	3	UJ	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8	UJ	8.5	UJ	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	28	UJ	30	UJ	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	28	UJ	30	UJ	NC	
C3Y1725	LORNG_JBW7348_10302023	LORNG_JBW7348_10302023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.3	J	3.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.4		5.3		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.4		6.3		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.4		4.2		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	6		5.6		7	
				Perfluorononanoic acid (PFNA) (NG/L)	0.43	J	0.5	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.89	U	0.93	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.44	U	0.47	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.89	U	0.93	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	0.89	U	0.93	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.44	U	0.47	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7		1.6		6	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2		2		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	24		24		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.39	J	0.34	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	25		20		22	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.83	U	0.88	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.42	U	0.44	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.89	U	0.93	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.7	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.7	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.4	U	3.6	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.22	U	0.23	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	0.89	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	0.89	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	0.89	U	0.93	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.89	U	0.93	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.2	U	2.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	4.4	U	4.7	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.5	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.4	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.44	U	0.47	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	53	U	56	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	5.9	U	6.2	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	5.9	U	6.2	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.7	U	2.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	7.8	U	8.2	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	27	U	29	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	27	U	29	U	NC	
C3Y1725	LORNG_JMW0882_10302023	LORNG_JMW0882_10302023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.6	J	2.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.5	J	1.5	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.4		3.5		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.6		1.6		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	13		13		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.69	J	0.75	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	0.98	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.51	U	0.49	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	0.98	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	0.98	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.51	U	0.49	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.75	J	0.74	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.84	J	1	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15		15		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.8	J	0.74	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	51		46		10	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.95	U	0.92	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.48	U	0.46	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	0.98	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.9	U	3.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.38	UJ	0.3	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	0.98	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	0.98	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	0.98	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	5.8		4.3		30	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.1	U	4.9	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.1	U	3.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.51	U	0.49	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	61	U	59	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.7	U	6.5	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.7	U	6.5	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.9	U	8.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	30	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	30	U	NC	
C3Y1725	LORNG_JMW0982_10302023	LORNG_JMW0982_10302023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	0.91	J	0.95	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.7	J	1.6	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.6		3.7		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.3	J	1.3	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.8		4.8		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.7	J	0.76	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.52	U	0.52	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.25	J	0.3	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.48	J	0.35	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	10		9.2		8	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	J	0.25	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	35		33		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.97	U	0.97	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.49	U	0.48	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2	U	2	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	3	J	3.2	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.9	U	3.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.7	J	1.6	J	6	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3		3.6		18	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.6	U	2.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.2	U	5.2	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.1	U	4.1	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.52	U	0.52	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	62	U	62	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.8	U	6.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.8	U	6.8	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.2	U	3.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	32	U	32	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	32	U	32	U	NC	
C3Y1725	LORNG_JMW1684_10302023	LORNG_JMW1684_10302023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.9	J	5.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	8.1		8.3		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.2		8.2		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.6		5.5		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.9		5.8		2	
				Perfluorononanoic acid (PFNA) (NG/L)	0.56	J	0.62	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	0.95	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.48	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	0.95	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	0.95	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.48	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3		2.9		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.8		3.7		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	36		36		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.7	J	0.65	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	44		43		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.95	U	0.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.45	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	0.95	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.6	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.24	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	0.95	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	0.95	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	4.8	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	3.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.48	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	61	U	57	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.7	U	6.3	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
SDGs C3X7141 and C3Y1725
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.7	U	6.3	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.9	U	8.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	30	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	30	U	NC	

Notes:

1 = Per QPP, RPD Limit 30 unless the difference between analyte concentrations is less than LOQ

U = Analyte not detected at the associated detection limits

J = Concentration is estimated

NC = RPD not calculated; values less than LOQ

RPD = relative percent difference

SDG = Sample Delivery Group

NG/L = nanograms per liter

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DATA VALIDATION SUMMARY REPORT - PFAS

COMPANY:	WSP USA Environment and Infrastructure
PROJECT NAME:	Loring AFB
SITE NAME:	Loring AFB RI-TO 1048
CONTRACTED LAB:	Bureau Veritas Laboratories, Mississauga, Ontario, Canada
PROJECT NUMBER:	775361701
QA/QC LEVEL:	EPA Stage 4 Validation Manual (S4VM)
ANALYTICAL METHOD:	EPA Draft Method 1633
VALIDATION GUIDELINES:	Quality Assurance Project Plan (QAPP) TO 1048 Quality Program Plan September 2023, USEPA Staged Validation Checklist – Stage 2B and Stage 4, Data Validation Guidelines Module 6, November 2022, Professional judgment
SAMPLE MATRIX:	Water and Soil
TYPES OF ANALYSES:	Per fluorinated Alkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectroscopy (LC-MS/MS)
DATA VALIDATION DATE:	January 31,2024
DATA REVIEWER(S):	Cathi Lesher
SECONDARY REVIEWER(S):	Timothy Morris, Kevin Harmon
SDG NUMBER:	C3W5473
SAMPLING DATE(S):	October 16, 2023

Forty PFAS analytes to be Validated

Analyte	Acronym	Extracted Internal Standard
Perfluorobutanoic acid	PFBA	13C4-PFBA
Perfluoropentanoic acid	PFPeA	13C5-PFPeA
Perfluorohexanoic acid	PFHxA	13C5-PFHxA
Perfluoroheptanoic acid	PFHpA	13C4-PFHpA
Perfluorooctanoic acid	PFOA	13C8-PFOA
Perfluorononanoic acid	PFNA	13C9-PFNA
Perfluorodecanoic acid	PFDA	13C6-PFDA
Perfluoroundecanoic acid	PFUnA	13C7-PFUnA
Perfluorododecanoic acid	PFDoA	13C2-PFDoA
Perfluorotridecanoic acid	PFTrDA	13C2-PFTeDA
Perfluorotetradecanoic acid	PFTeDA	13C2-PFTeDA
Perfluorobutanesulfonic acid	PFBS	13C3-PFBS
Perfluoropentanesulfonic acid	PFPeS	13C3-PFHxS
Perfluorohexanesulfonic acid	PFHxS	13C3-PFHxS
Perfluoroheptanesulfonic acid	PFHpS	13C8-PFOS
Perfluorooctanesulfonic acid	PFOS	13C8-PFOS
Perfluorononanesulfonic acid	PFNS	13C8-PFOS
Perfluorodecanesulfonic acid	PFDS	13C8-PFOS
Perfluorododecanesulfonic acid	PFDoS	13C8-PFOS
1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2 FTS	13C2-4:2FTS
1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2 FTS	13C2-6:2FTS
1H,1H,2H,2H-Perfluorodecane sulfonic	8:2 FTS	13C2-8:2FTS
Perfluorooctanesulfonamide	PFOSA	13C8-PFOSA
N-ethyl perfluorooctanesulfonamide	EtFOSA	D5-EtFOSA
N-methyl perfluorooctanesulfonamide	MeFOSA	D3-MeFOSA
N-ethyl perfluorooctanesulfonamidoacetic acid	EtFOSAA	D5-EtFOSAA
N-methyl perfluorooctanesulfonamidoacetic acid	MeFOSAA	D3-MeFOSAA
N-ethyl perfluorooctanesulfonamidoethanol	EtFOSE	D9-EtFOSE
N-methyl perfluorooctanesulfonamidoethanol	MeFOSE	D7-MeFOSE
Hexafluoropropylene oxide dimer acid	HFPO-DA	13C3HFPO-DA
4,8-Dioxa-3-H-perfluorononanoic acid	ADONA	13C3HFPO-DA
Perfluoro-3-methoxypropanoic acid	PFMPA	13C5-PFPeA
Perfluoro-4-methoxybutanoic acid	PFMBA	13C5-PFPeA
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	13C5-PFHxA
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	13C3HFPO-DA
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	13C3HFPO-DA
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	13C5-PFHxA
3-Perfluoropropyl propanoic acid	3:3FTCA	13C5-PFPeA
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	13C5-PFHxA
3-Perfluoroheptyl propanoic acid	7:3FTCA	13C5-PFHxA

QAPP Validation Qualifiers

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Bureau Veritas Laboratories – SDG: C3W5473

PFAS (Per- and polyfluoroalkyl substances)

SUMMARY

I.) General:

The samples were extracted and analyzed by LC/MS/MS for a selected list of PFAS using the PFAS Extracted Internal Standard (EIS) quantification, EPA DRAFT METHOD 1633. The results for PFHxS, PFOA, PFOS, PFNA, PFOSA, MeFOSA, EtFOSA, MeFOSAA, EtFOSAA, MeFOSE and EtFOSE include both linear and branched isomers (standards are quantitative or qualitative). Results for all other analytes include the linear isomers only.

II.) Overall Assessment of Data:

The overall assessment of data was acceptable. Data qualifiers are summarized in Attachment A, Table 3 "Summary of Data Validation Actions".

MAJOR ISSUES

The following sample reported Extracted Internal Standard (EIS) recoveries less than the expanded lower control limit of 10%. All associated sample results are non-detects and the results are unusable and have ben qualified "R".

LAB ID	CLIENT ID	EIS	ANALYTE(S)	QUAL
XIK623	LORNG SB16018-00-01-10162023	D7MeFOSE	MeFOSE	R
		D9EtFOSE	EtFOSE	R

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete and accurate case narrative in the data package. The data package contains results for all samples and method types listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The samples were received within the project QAPP temperature requirements of ≤ 10°C. All holding time criteria were met. No data were qualified.

III.) Mass Calibration:

INSTRUMENT: LCMS07
Mass calibration was completed on October 13, 2023, to original equipment manufacturer's specifications for analytical batches 9038477, 9038641 and 9041626.

IV.) LC-MS Tune:

Autotunes were performed on instrument LCMS07 with acceptable results. All masses were acceptable. All instrument tunes met the project QAPP criteria.

V.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met. The ICALs and ICVs met all project QAPP requirements. No data qualification was necessary.

VI.) Instrument Sensitivity Check (ISC):

Analyte concentrations were at LOQ. The ISC samples met all project QAPP requirements. No data qualification was necessary.

VII.) Continuing Calibration (CCV):

All Continuing Calibration Verification criteria met project QAPP criteria. No data qualification was necessary.

VIII.) Blanks:

Instrument Blanks:

The instrument blanks met all project QAPP criteria. Instrument blank IB9038641 reported ADONA at 0.0120 ng/g. All associated sample results were non-detect for this analyte. No qualification was necessary.

Method Blanks:

A method blank was prepared and analyzed for each preparation batch. There were no detections in the method blanks. No data qualification was needed.

Field and Equipment Blanks present in this SDG were used in evaluating blank contamination for the associated samples in this case based on sampling date.

Field Blanks:

There were no field blanks associated with this SDG. No data qualification was necessary.

Equipment Blanks (Rinse Blanks):

The rinse blank associated with this SDG, XIK633 LORNG-EB101-10162023, was free from

contamination. No data were qualified based on Rinse Blank contamination.

IX.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analysis was performed on the following SDG samples:

Laboratory ID	Client Sample ID	QA/QC Batch
XIK625	LORNG SB06018-00-01-10162023	9038477
XIK626	LORNG SB06018-04-06-10162023	9038641

The Percent Recoveries (%Rs) and Relative Percent Differences (RPDs) met project QAPP criteria.

X.) Laboratory Control Samples / Laboratory Control Sample Duplicate (LCS / LCSD):

A spiked blank (LCS) was prepared and analyzed for the water preparation batch. All LCS recoveries met project QAPP criteria. No data qualification was necessary.

XI.) Field Duplicates (FD):

The following FD samples were identified in the SDG. Relative Percent Differences (RPDs) for the detected analyte results were calculated to evaluate the field sampling and laboratory precision for the sample matrix.

Parent Sample ID (Lab ID)	Duplicate Sample ID (Lab ID)
LORNG SB06018-04-06-10162023(XIK626)	LORNG SB06018-04-06-10162023FD (XIK627)
LORNG SB06022-00-01-10162023(XIK630)	LORNG SB06022-00-01-10162023FD (XIK631)

The following table lists the FD pair RPDs requiring qualification actions. The parent and duplicate sample are qualified.

Parent Sample ID (Lab ID)	ANALYTE	RPD	QC LIMIT	QUAL
LORNG SB06018-04-06-10162023(XIK626)	PFOS	31%	</=30%	J
LORNG SB06022-00-01-10162023(XIK630)	PFOS	127%	</=30%	J

XII.) Extracted Internal Standard Analytes (EIS):

All EIS in the samples in this SDG reported recoveries within the of 20%-150% criteria, with the following exceptions:

LAB ID	CLIENT ID	EIS	ANALYTE(S)	QUAL
XIK627	LORNG SB06018-04-06-10162023	D3MeFOSA D5EtFOSA	MEFOSA EtFOSA	UJ UJ
XIK628	LORNG SB06018-09-11-10162023	D3MeFOSA D5EtFOSA	MEFOSA EtFOSA	UJ UJ

Several samples reported recoveries for EIS greater than the upper control limit, the associated results were all non-detect. No qualification was needed.

XIII.) Ion Transitions:

Ion transition criteria were met. No qualification was necessary.

XIV.) Ion Ratio:

All ion ratio criteria were met, with the following exceptions:

LAB ID	CLIENT ID	ANALYTE(S)	QUAL
XIK618	LORNG SB06020-04-06-10162023	PFPeA PFHpS	J
XIK623	LORNG SB16018-00-01-10162023	PFPeA PFHxA	J
XIK617	LORNG SB06020-04-06-10162023	PFPeA PFDA PFHpS PFOSA	J
XIK624	LORNG SB16018-02-04-10162023	PFPeA PFOSA	J
XIK630	LORNG SB06022-00-01-10162023	PFBS	J

XV.) Reporting limits (RLs):

All LOQs (Limit of Quantitation) were acceptable. Due to high concentrations or matrix interference, dilutions were required for PFOS in some samples at 10X, dilution which resulted in elevated detection limits.

XVI.) Bile Salt Standard Retention Time Check:

The bile salt standard met the method retention time requirements.

XVII.) Reanalysis:
There were no reanalysis of any samples in the SDG.

Attachment A

Tables

Table 1

Summary of Samples and Analytical Methods

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

							Method Class	PFAS	WetChem	
							Analysis Method	E1633DR	A2540G	D297487
							Fraction	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code		ParamCount	ParamCount	ParamCount
C3W5473	FIELDQC	LORNG_EB100_10162023	XIK613	10/16/2023	WQ	EB		40		
		LORNG_EB101_10162023	XIK633	10/16/2023	WQ	EB		40		
		LORNG_EB102_10172023	XIK634	10/17/2023	WQ	EB		40		
	SB06019	LORNG_SB06019_00-01_10162023	XIK614	10/16/2023	SO	N		40	1	1
		LORNG_SB06019_04-06_10162023	XIK615	10/16/2023	SO	N		40	1	1
		LORNG_SB06019_08-10_10162023	XIK616	10/16/2023	SO	N		40	1	1
	SB06020	LORNG_SB06020_00-01_10162023	XIK617	10/16/2023	SO	N		40	1	1
		LORNG_SB06020_04-06_10162023	XIK618	10/16/2023	SO	N		40	1	1
	SB06021	LORNG_SB06021_00-02_10162023	XIK629	10/16/2023	SO	N		40	1	1
	SB06022	LORNG_SB06022_00-01_10162023	XIK630	10/16/2023	SO	N		40	1	1
		LORNG_SB06022_00-01_10162023FD	XIK631	10/16/2023	SO	FD		40	1	1
		LORNG_SB06022_03-04_10162023	XIK632	10/16/2023	SO	N		40	1	1
	SB16016	LORNG_SB16016_00-01_10162023	XIK619	10/16/2023	SO	N		40	1	1
		LORNG_SB16016_03-05_10162023	XIK620	10/16/2023	SO	N		40	1	1
	SB16017	LORNG_SB16017_00-01_10162023	XIK621	10/16/2023	SO	N		40	1	1
		LORNG_SB16017_02-04_10162023	XIK622	10/16/2023	SO	N		40	1	1
	SB16018	LORNG_SB06018_00-01_10162023	XIK625	10/16/2023	SO	N		40	1	1
		LORNG_SB06018_00-01_10162023MS	XIK625MS	10/16/2023	SO	MS		40		
		LORNG_SB06018_00-01_10162023SD	XIK625SD	10/16/2023	SO	SD		40		
		LORNG_SB06018_04-06_10162023	XIK626	10/16/2023	SO	N		40	1	1
		LORNG_SB06018_04-06_10162023FD	XIK627	10/16/2023	SO	FD		40	1	1
		LORNG_SB06018_04-06_10162023MS	XIK626MS	10/16/2023	SO	MS		40		
		LORNG_SB06018_04-06_10162023SD	XIK626SD	10/16/2023	SO	SD		40		
		LORNG_SB06018_09-11_10162023	XIK628	10/16/2023	SO	N		40	1	1
		LORNG_SB16018_00-01_10162023	XIK623	10/16/2023	SO	N		40	1	1
		LORNG_SB16018_02-04_10162023	XIK624	10/16/2023	SO	N		40	1	1

Notes:
N = Total Shaded = Stage 4 Samples
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/22/24
Checked by: RT
Date: 3/20/24

Table 2

Summary of Analytical Results

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5															
			Location	SB06019						SB06020				SB06021					
			Sample Date	10/16/2023						10/16/2023				10/16/2023					
			Sample ID	LORNG_SB06019_00-01_10162023		LORNG_SB06019_04-06_10162023		LORNG_SB06019_08-10_10162023		LORNG_SB06020_00-01_10162023		LORNG_SB06020_04-06_10162023		LORNG_SB06021_00-02_10162023		LORNG_SB00-01_101	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0016		0.0002	U	0.00011	J	0.00028	U	0.00021	U	0.0002	U	0.0016	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.002		0.00021	J	0.00031	J	0.000076	J	0.000041	J	0.000069	J	0.002	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00089		0.00012	J	0.00018	J	0.00014	U	0.000039	J	0.000044	J	0.00094	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00097		0.00019	J	0.00027		0.00014	U	0.000037	J	0.000042	J	0.0011	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.002		0.00017	J	0.00028		0.00032	J	0.00018	J	0.00009	J	0.0023	
		Perfluorononanoic acid (PFNA)	MG/KG	0.0016		0.0001	J	0.00024	J	0.00098		0.00033		0.00013	U	0.0018	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00056		0.0001	U	0.0001	U	0.000076	J	0.0001	U	0.0001	U	0.00067	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00053		0.0001	U	0.0001	U	0.000093	J	0.0001	U	0.0001	U	0.00067	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000045	J	0.0001	U	0.0001	U	0.00014	U	0.0001	U	0.0001	U	0.000053	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00014	U	0.0001	U	0.0001	U	0.0001	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00014	U	0.0001	U	0.0001	U	0.0001	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000092	J	0.000089	U	0.000089	U	0.00012	U	0.000092	U	0.00009	U	0.000068	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000094	U	0.000094	U	0.000094	U	0.00013	U	0.000098	U	0.000095	U	0.000095	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.000095	J	0.000045	J	0.000091	U	0.00081		0.00037		0.0001	J	0.000099	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00012	U	0.00012	U	0.00028	J	0.000082	J	0.00012	U	0.00012	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0033		0.00025		0.00018	J	0.02		0.0048		0.0012		0.0039	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00012	U	0.00012	U	0.00017	U	0.00012	U	0.00012	U	0.00012	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000096	U	0.000096	U	0.000096	U	0.00013	U	0.0001	U	0.000097	U	0.000098	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00023	U	0.00017	U	0.00016	U	0.00017	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00053	U	0.00039	U	0.00038	U	0.00038	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00071	J	0.00054	J	0.0006	J	0.00053	U	0.00039	U	0.00038	U	0.0012	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0048		0.0012		0.0021		0.00054	U	0.0004	U	0.00039	U	0.0077	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00005	U	0.00005	U	0.00005	U	0.000085	J	0.000052	U	0.000051	U	0.000051	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00014	U	0.0001	U	0.0001	U	0.0001	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00005	U	0.00005	U	0.00005	U	0.00007	U	0.000052	U	0.000051	U	0.000051	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00023	U	0.00017	U	0.00016	U	0.00017	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00023	U	0.00017	U	0.00016	U	0.00017	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U	0.0013	U	0.0013	U	0.0018	U	0.0013	U	0.0013	U	0.0013	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0016	U	0.0016	U	0.0023	U	0.0017	U	0.0016	U	0.0017	

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5															
			Location	SB06019						SB06020				SB06021					
			Sample Date	10/16/2023						10/16/2023				10/16/2023					
			Sample ID	LORNG_SB06019_00-01_10162023		LORNG_SB06019_04-06_10162023		LORNG_SB06019_08-10_10162023		LORNG_SB06020_00-01_10162023		LORNG_SB06020_04-06_10162023		LORNG_SB06021_00-02_10162023		LORNG_SB00-01_101	
			QC Code	N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result			
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0002	U	0.0002	U	0.0002	U	0.00028	U	0.00021	U	0.0002	U	0.0002			
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00053	U	0.00039	U	0.00038	U	0.00038			
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00014	U	0.0001	U	0.0001	U	0.0001			
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.0002	U	0.0002	U	0.00028	U	0.00021	U	0.0002	U	0.0002			
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0025	U	0.0025	U	0.0025	U	0.0035	U	0.0026	U	0.0025	U	0.0025			
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00053	U	0.00039	U	0.00038	U	0.00038			
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00053	U	0.00039	U	0.00038	U	0.00038			
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00029	U	0.00029	U	0.00029	U	0.0004	U	0.0003	U	0.00029	U	0.00029			
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00081	U	0.00081	U	0.00081	U	0.0011	U	0.00085	U	0.00082	U	0.00083			
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0041	U	0.0041	U	0.0041	U	0.0058	U	0.0043	U	0.0042	U	0.0042			
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0041	U	0.0041	U	0.0041	U	0.0058	U	0.0043	U	0.0042	U	0.0042			

Prepared by: AKN
Date: 2/12/24
Checked by:
Date:
RT 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

		SDG		473										
		Location		SB06022				SB16016				SB16017		
		Sample Date		10/16/2023				10/16/2023				10/16/2023		
		Sample ID		06022_0 62023	LORNG_SB06022_0 0-01_10162023FD		LORNG_SB06022_0 3-04_10162023		LORNG_SB16016_0 0-01_10162023		LORNG_SB16016_0 3-05_10162023		LORNG_SB16017_0 0-01_10162023		LORNG_SB16017_0 2-04_10162023	
		QC Code			FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG		0.00019	U	0.0002	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG		0.0001	J	0.000063	J	0.000064	J	0.000094	U	0.000094	U	0.000093	U
		Perfluorohexanoic acid (PFHxA)	MG/KG		0.000055	J	0.00003	J	0.000056	J	0.000094	U	0.000094	U	0.000093	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG		0.000072	J	0.0001	U	0.000063	J	0.000094	U	0.000094	U	0.000093	U
		Perfluorooctanoic acid (PFOA)	MG/KG		0.000078	J	0.0001	U	0.000081	J	0.000094	U	0.000094	U	0.000093	U
		Perfluorononanoic acid (PFNA)	MG/KG		0.00012	U	0.00013	U	0.000062	J	0.00012	U	0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG		0.000097	U	0.0001	U	0.000043	J	0.000094	U	0.000094	U	0.000093	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG		0.000097	U	0.0001	U	0.000043	J	0.000094	U	0.000094	U	0.000093	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	J	0.000097	U	0.0001	U	0.000098	U	0.000094	U	0.000094	U	0.000093	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U	0.000097	U	0.0001	U	0.000098	U	0.000094	U	0.000094	U	0.000093	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U	0.000097	U	0.0001	U	0.000098	U	0.000094	U	0.000094	U	0.000093	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	J	0.000086	U	0.000089	U	0.000087	U	0.000083	U	0.000084	U	0.000082	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	U	0.000091	U	0.000094	U	0.000092	U	0.000088	U	0.000089	U	0.000087	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	J	0.000088	U	0.000033	J	0.00011	J	0.000053	J	0.000086	U	0.000084	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U	0.00011	U	0.00012	U	0.00012	U	0.00011	U	0.00011	U	0.00011	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	J	0.00087		0.00076		0.00062		0.00025		0.00056		0.000086	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U	0.00012	U	0.00012	U	0.00012	U	0.00011	U	0.00011	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U	0.000093	U	0.000097	U	0.000094	U	0.00009	U	0.000091	U	0.000089	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00015	U	0.00015	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U	0.00036	U	0.00038	U	0.00037	U	0.00035	U	0.00035	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG		0.00036	U	0.00038	U	0.00037	U	0.00035	U	0.00035	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG		0.00037	U	0.00039	U	0.00038	U	0.00036	U	0.00037	U	0.00036	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U	0.000048	U	0.00005	U	0.000049	U	0.000047	U	0.000047	U	0.000046	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U	0.000097	U	0.0001	U	0.000098	U	0.000094	U	0.000094	U	0.000093	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U	0.000048	U	0.00005	U	0.000049	U	0.000047	U	0.000047	U	0.000046	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00015	U	0.00015	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00015	U	0.00015	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U	0.0012	U	0.0013	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	U	0.0016	U	0.0016	U	0.0016	U	0.0015	U	0.0015	U	0.0015	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

SDG				473											
Location				SB06022				SB16016				SB16017			
Sample Date				10/16/2023				10/16/2023				10/16/2023			
Sample ID				06022_062023		LORNG_SB06022_00-01_10162023FD		LORNG_SB06022_03-04_10162023		LORNG_SB16016_00-01_10162023		LORNG_SB16016_03-05_10162023		LORNG_SB16017_00-01_10162023		LORNG_SB16017_02-04_10162023	
QC Code						FD		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.00019	U	0.0002	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.00036	U	0.00038	U	0.00037	U	0.00035	U	0.00035	U	0.00035	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.000097	U	0.0001	U	0.000098	U	0.000094	U	0.000094	U	0.000093	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.00019	U	0.0002	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.0024	U	0.0025	U	0.0024	U	0.0023	U	0.0024	U	0.0023	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.00036	U	0.00038	U	0.00037	U	0.00035	U	0.00035	U	0.00035	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.00036	U	0.00038	U	0.00037	U	0.00035	U	0.00035	U	0.00035	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.00028	U	0.00029	U	0.00028	U	0.00027	U	0.00027	U	0.00027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.00079	U	0.00082	U	0.00079	U	0.00076	U	0.00077	U	0.00075	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.004	U	0.0041	U	0.004	U	0.0039	U	0.0039	U	0.0038	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.004	U	0.0041	U	0.004	U	0.0039	U	0.0039	U	0.0038	U

Prepared by: AKN
Date: 2/12/24
Checked by:
Date:
RT
3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5473									
			Location	SB16018									
			Sample Date	10/16/2023									
			Sample ID	LORNG_SB06018_00-01_10162023		LORNG_SB16018_00-01_10162023		LORNG_SB16018_02-04_10162023		LORNG_SB06018_04-06_10162023		LORNG_SB06018_04-06_10162023FD		LORNG_SB06018_09-11_10162023	
			QC Code	N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0019		0.000088	J	0.00019	U	0.00015	J	0.00015	J	0.00022	J
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0034		0.000068	J	0.000051	J	0.00052		0.00052		0.00087	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0011		0.000069	J	0.00004	J	0.00026		0.00027		0.00047	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0013		0.000049	J	0.000096	U	0.00033		0.0003		0.00056	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0022		0.00013	J	0.000057	J	0.00032		0.00037		0.0007	
		Perfluorononanoic acid (PFNA)	MG/KG	0.0025		0.00014	J	0.00012	U	0.00034		0.00044		0.00058	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00057		0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000043	J
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0003		0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000095	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0001	U	0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000095	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0001	U	0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000095	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0001	U	0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000095	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000047	J	0.000088	U	0.000085	U	0.000026	J	0.000023	J	0.000095	J
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000053	J	0.000093	U	0.00009	U	0.000055	J	0.000055	J	0.00016	J
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0013		0.00019	J	0.000058	J	0.00064		0.00068		0.0016	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00018	J	0.00012	U	0.00011	U	0.000055	J	0.000056	J	0.00014	J
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.048		0.0039		0.0015		0.011	J	0.015		0.019	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00028		0.00012	U	0.00012	U	0.00011	U	0.00012	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0001	J	0.000096	U	0.000093	U	0.00009	U	0.000093	U	0.000092	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.000093	J	0.00016	U	0.00016	U	0.00015	U	0.00016	U	0.00015	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00039	U	0.00037	U	0.00036	U	0.00035	U	0.00036	U	0.00036	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0012		0.00037	U	0.00036	U	0.00034	J	0.00034	J	0.001	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0068		0.00039	U	0.00037	U	0.00036	U	0.00022	J	0.00085	J
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00047		0.00005	U	0.00005	J	0.000047	U	0.000048	U	0.00015	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0001	U	0.000099	U	0.000096	U	0.000093	U	0.000097	UJ	0.000095	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000052	U	0.00005	R	0.000048	U	0.000047	U	0.000048	UJ	0.000048	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00017	U	0.00016	U	0.00016	U	0.00015	U	0.00016	U	0.00015	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00017	U	0.00016	U	0.00016	U	0.00015	U	0.00016	U	0.00015	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U	0.0012	R	0.0012	U	0.0012	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0017	U	0.0016	U	0.0016	U	0.0015	U	0.0016	U	0.0015	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5473									
			Location	SB16018									
			Sample Date	10/16/2023									
			Sample ID	LORNG_SB06018_00-01_10162023		LORNG_SB16018_00-01_10162023		LORNG_SB16018_02-04_10162023		LORNG_SB06018_04-06_10162023		LORNG_SB06018_04-06_10162023FD		LORNG_SB06018_09-11_10162023	
			QC Code	N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00021	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U	0.00019	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00039	U	0.00037	U	0.00036	U	0.00035	U	0.00036	U	0.00036	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0001	U	0.000099	U	0.000096	U	0.000093	U	0.000097	U	0.000095	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00021	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0026	U	0.0025	U	0.0024	U	0.0023	U	0.0024	U	0.0024	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00039	U	0.00037	U	0.00036	U	0.00035	U	0.00036	U	0.00036	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00039	U	0.00037	U	0.00036	U	0.00035	U	0.00036	U	0.00036	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0003	U	0.00029	U	0.00028	U	0.00027	U	0.00028	U	0.00027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00085	U	0.00081	U	0.00078	U	0.00076	U	0.00079	U	0.00077	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0024	J	0.0041	U	0.004	U	0.0039	U	0.004	U	0.0039	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0043	U	0.0041	U	0.004	U	0.0039	U	0.004	U	0.0039	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5473						
			Location	FIELDQC						
			Sample Date	10/16/2023				10/17/2023		
			Sample ID	LORNG_EB100_10162023		LORNG_EB101_10162023		LORNG_EB102_10172023		
			QC Code	EB		EB		EB		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.8	U	1.8	U	1.8	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluorohexanoic acid (PFHxA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluorooctanoic acid (PFOA)	NG/L	0.23	U	0.23	U	0.23	U	
		Perfluorononanoic acid (PFNA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluorodecanoic acid (PFDA)	NG/L	0.91	U	0.91	U	0.91	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	0.91	U	0.91	U	0.91	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.91	U	0.91	U	0.91	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.45	U	0.45	U	0.45	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.4	U	0.4	U	0.4	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.43	U	0.43	U	0.43	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.43	U	0.43	U	0.43	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.43	U	0.43	U	0.43	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.43	U	0.43	U	0.43	U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.85	U	0.85	U	0.85	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.43	U	0.43	U	0.43	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.91	U	0.91	U	0.91	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.7	U	1.7	U	1.7	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.7	U	1.7	U	1.7	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.5	U	3.5	U	3.5	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.23	U	0.23	U	0.23	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.91	U	0.91	U	0.91	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.91	U	0.91	U	0.91	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.91	U	0.91	U	0.91	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.91	U	0.91	U	0.91	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3	U	2.3	U	2.3	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.5	U	4.5	U	4.5	U	

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5473					
			Location	FIELDQC					
			Sample Date	10/16/2023				10/17/2023	
			Sample ID	LORNG_EB100_10162023		LORNG_EB101_10162023		LORNG_EB102_10172023	
			QC Code	EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6	U	3.6	U	3.6	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.5	U	3.5	U	3.5	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.45	U	0.45	U	0.45	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	55	U	55	U	55	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6	U	6	U	6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6	U	6	U	6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.8	U	2.8	U	2.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8	U	8	U	8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	28	U	28	U	28	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	28	U	28	U	28	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/20/24

Table 3

Summary of Data Validation Actions

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W5473	E1633DR	T	XIK626	LORNG_SB06018_04-06_10162023	Perfluorooctanesulfonic acid (PFOS)	0.011		0.011	J	FDD	MG/KG
			XIK627	LORNG_SB06018_04-06_10162023FD	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.000097	U	0.000097	UJ	EISL	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.000048	U	0.000048	UJ	EISL	MG/KG
			XIK628	LORNG_SB06018_09-11_10162023	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.000095	U	0.000095	UJ	EISL	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.000048	U	0.000048	UJ	EISL	MG/KG
			XIK617	LORNG_SB06020_00-01_10162023	Perfluoropentanoic acid (PFPeA)	0.000076	J	0.000076	J	IAG	MG/KG
					Perfluorodecanoic acid (PFDA)	0.000076	J	0.000076	J	IAG	MG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.00028	J	0.00028	J	IAG	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.000085	J	0.000085	J	IAG	MG/KG
			XIK618	LORNG_SB06020_04-06_10162023	Perfluoroheptanoic acid (PFHpA)	0.000037	J	0.000037	J	IAG	MG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.000082	J	0.000082	J	IAG	MG/KG
			XIK630	LORNG_SB06022_00-01_10162023	Perfluorobutanesulfonic acid (PFBS)	0.000068	J	0.000068	J	IAG	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0039		0.0039	J	FDD	MG/KG
			XIK623	LORNG_SB16018_00-01_10162023	Perfluorohexanoic acid (PFHxA)	0.000069	J	0.000069	J	IAG	MG/KG
					Perfluoroheptanoic acid (PFHpA)	0.000049	J	0.000049	J	IAG	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.00005	U	0.00005	R	EISL	MG/KG
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.0012	U	0.0012	R	EISL	MG/KG
			XIK624	LORNG_SB16018_02-04_10162023	Perfluoropentanoic acid (PFPeA)	0.000051	J	0.000051	J	IAG	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.00005	J	0.00005	J	IAG	MG/KG

Prepared by:AKN
Date:2/12/24
Checked by: RT 3/20/24
Date:

Table 4

Field Duplicate RPD Summary

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W5473
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3W5473	LORNG_SB06018_04-06_10162023	LORNG_SB06018_04-06_10162023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00015	J	0.00015	J	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00052		0.00052		0	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00026		0.00027		4	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00033		0.0003		10	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00032		0.00037		14	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00034		0.00044		26	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000026	J	0.000023	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000055	J	0.000055	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00064		0.00068		6	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.000055	J	0.000056	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.011		0.015		31	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00009	U	0.000093	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00015	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00035	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00034	J	0.00034	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00036	U	0.00022	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000047	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.000093	U	0.000097	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000047	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00015	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00015	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0012	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0015	U	0.0016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00019	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00035	U	0.00036	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.000093	U	0.000097	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0023	U	0.0024	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00035	U	0.00036	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00035	U	0.00036	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00027	U	0.00028	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00076	U	0.00079	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0039	U	0.004	U	NC	

Prepared by: AKN 2/2/24
Checked by: RT 3/20/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W5473
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0039	U	0.004	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	12		12		0	
				TOTAL SOLIDS (PERCENT)	88		88		0	
C3W5473	LORNG_SB06022_00-01_10162023	LORNG_SB06022_00-01_10162023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0016		0.00019	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.002		0.0001	J	181	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00094		0.000055	J	178	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0011		0.000072	J	175	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0023		0.000078	J	187	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0018		0.00012	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00067		0.000097	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00067		0.000097	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000053	J	0.000097	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0001	U	0.000097	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0001	U	0.000097	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000068	J	0.000086	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000095	U	0.000091	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.000099	J	0.000088	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00012	U	0.00011	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0039		0.00087		127	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000098	U	0.000093	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00017	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00038	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0012		0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0077		0.00037	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000051	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0001	U	0.000097	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000051	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00017	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00017	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0013	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0017	U	0.0016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0002	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00038	U	0.00036	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0001	U	0.000097	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0002	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0025	U	0.0024	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00038	U	0.00036	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00038	U	0.00036	U	NC	

Prepared by: AKN 2/2/24
Checked by: RT 3/20/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W5473
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00029	U	0.00028	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00083	U	0.00079	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0042	U	0.004	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0042	U	0.004	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	19		13		38	
				TOTAL SOLIDS (PERCENT)	81		87		7	

Prepared by: AKN 2/2/24
Checked by: RT 3/20/24

Attachment B

Completed DV Checklist with Notes

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 2B
PFAS – DoD QSM 5.4 Table B-24

Project Task:
Method: 1633 **Lab and SDG:** Bureau Veritas C3W5473
Date: 3/18/24 **Reviewer:** Cathi Lesher

☐ **USEPA Stage 2B**

NOTE: *Per QSM 5.4 Table B-24: In addition to the requirements specified in Table B-24, ALL OF THE REQUIREMENTS CONTAINED IN EPA DRAFT METHOD 1633 (CURRENT VERSION) MUST BE MET.*

1. ☒ **Case Narrative and Data Package Completeness**
   - COC review
   - Requested compound list reported
   - Detection Limits meet QAPP and PALs and correct analysis level was reported (low/standard level)
   - Results between MDL and LOQ qualified estimated (J), NDs reported to LOD
   - Confirm transition ions in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard Used for Quantification*" table in current draft Method 1633) were used for all analytes

2. ☒ **Holding Time and Sample Preservation/Collection**
   - Sample conditions upon receipt at laboratory
   - Holding times met (See Section 8.5 Holding Times in Method 1633 for more information and exceptions re NFDHA):
   - ----Aqueous samples 28 days to extraction if stored by lab at 0-6 degrees C and protected from light/90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Soil/Solid samples 90 days to extraction if stored by lab at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Tissue samples 90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Biosolids samples 90 days to extraction if stored at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - Collection, preparation, and analysis date verification

3. ☒ **QC Blanks**
   - Completeness and evaluation
   - Method blanks (preparation) ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
   - Instrument blanks ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
   - Field QC blanks –See discussion in Module 6 Section 3.3.1
   - For all blank qualification actions follow Module 6 Table III (below) and discussions in Module 6 Section 3.3.1 and 4.7, and use ≤2x blank concentration for qualifying result U if sample result is > LOD and ≤ LOQ—

Sample Result	Validated Result	Validation Qualifier
Non-detect or detect ≤LOD	Report at LOD	U
>LOQ but ≤5x blank	Report at sample result	J+
>LOQ and >5x blank	Report at sample result	None

4. X **Instrument Tuning and Instrument Sensitivity Check (ISC)**
   - Mass Calibration performed annually or as recommended by the instrument manufacturer, whichever is more frequent, per Method 1633 Section 10.1
   - Mass Calibration Verification ± 0.2 amu per Method 1633 (not specified in Table B-24)
   - Valid Mass Calibration Verification before ICAL and sample analysis
   - ISC concentrations at LOQ and recoveries ±30%
   - Valid ISC prior to sample analysis

5. X **Initial Calibration**
   - Sequence Log and Preparation Log Review
   - Quantitative/Qualitative Standard Review - Confirm analytes with branched isomers in the initial calibration standards are identified in the lab report and that areas of branched isomers area included in the calibration response areas for those analytes (See Method 1633 Sections 10.1.1 and 15.1.3).
   - Confirm lowest standard concentration is ≤ the LOQ.
   - %RSD RFs ≤ 20; linear $r^2 \geq 0.99$ (DoD QSM 5.4 B-24). If %RSD >30 use judgment to J or R.
   - Calibration standards recovered 70-130% of true value
   - ICV ±30%
   - Instrument Blank Review

6. X **Continuing Calibration**
   - Verify the CCV was analyzed every 10 samples in sequence.
   - %D ±30%
   - Use judgment to J or R for %D > 50
   - Instrument Blank Review

7. X **Laboratory Control Samples** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)
   - Completeness and evaluation
   - Percent Recoveries within criteria
   - RPD ≤30 if LCSD reported
   - Ion ratios within limit for all analytes

8. X **Matrix Duplicate (Lab Duplicate) and Field Duplicate Precision**
   - Completeness and evaluation
   - Lab Duplicate RPD ≤ 30
   - Field Duplicate use QAPP Limits or determine project limits

9. X **Matrix Spike Results** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)
   - Completeness and evaluation
   - Recovery within criteria and RPD ≤ 30

10. X **Ion Abundance Ratio (IAR)** See Below
    - As defined in Method 1633 4th Draft Section 14.3.5: AreaQ1/AreaQ2 where Q1 and Q2 are primary and secondary transition masses for detected compounds. Acceptance criteria are based on comparison with ion ratios established by the ICAL midpoint standard or daily CCV. If secondary transition masses are identified in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard*

Used for Quantification" table in current draft Method 1633), IAR must be within ±50% of IAR established for the ICAL midpoint standard or daily CCV per Section 15.1.3. Check ion ratios reported for LCS and samples.

11. X Extracted Internal Standard (EIS) See Below

- Lab Recovery Limits B-24 (%R 20-150 vs ICAL midpoint or CCV)
- J for %R <20 and >200 (Module 6)
- R ND results if <10 and use judgment for detections
- RTs for samples and batch QC 0.40 minutes of CCV or initial calibration (if no CCV run)
- Analytes RT within +/- 0.1 minutes of their associated EIS

12. X Non-Extracted Internal Standard (NIS) Recovery (%R >30 vs ICAL midpoint or CCV)

- DoD Module 6 criteria: J/UJ results if <30 or use professional judgment for R (Note: Method 1633 Section 14.9 specifies NIS recoveries within 50-200% vs CCV)
- RTs for samples 0.40 minutes of CCV or initial calibration (if no CCV run)

13. X Bile Salt Standard Retention Time (RT) Check

Did the laboratory analyze a bile salt standard? (required by Method 1633/QSM 5.4 B-24 for all sample matrices) YES NO (circle one)

Is the RT of the bile salt standard >1 minute from the RT window for PFOS (including linear and branched isomers)? YES NO (circle one)

NOTE: Three bile acids (TDCA, TCDCA, and TUDCA) have the same (<1 amu) primary transition masses as PFOS: m/z 498.9 ->79.9 for PFOS, and m/z 499.2 ->79.9 for the bile acids. As a result, the presence of these bile acids in samples can cause high bias to PFOS concentrations if co-eluting with PFOS. The bile salt standard must demonstrate chromatographic separation so there is no co-elution with any PFOS isomer.

Review Notes:

1.) 2 EIS in sample XI623 outside expanded lower control limit require R qualification.

2.) Several EIS recoveries high in multiple samples, all non-detect. No qualification.

3.) Several EIS recoveries in multiple samples low resulting in J/UJ qualification.

4.) Ion Ratios: multiple out in multiple samples, detects were qualified "J".

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 4
PFAS – DoD QSM 5.4 Table B-24

STAGE 3/STAGE 4 REVIEW RECORD

Project Task: Loring Air Force Base
Method: 1633 **Lab and SDG:** Bureau Veritas C3W5473
Date: 3/18/24 **Reviewer:** Cathi Lesher

This checklist is completed in conjunction with a Stage 2B checklist, Data Validation Guidelines Module 6, and criteria from DoD QSM 5.4 B-24.

☒ Standard Preparation and Traceability Review
Obtain standard preparation documentation and original vendor certificates and confirm concentrations for initial calibration working standard, ICV, and LCS for 10% of target analytes. Determine if compounds had vendor standards for salt forms for any compounds. If standard with salts were used, confirm concentrations were adjusted for acid fraction concentration.

☒ Initial Calibration (including ICV and ISC)
Raw Data and Calculation 10% of target analytes – RF or RRF
Raw Data and Calculation 10% of target analytes – RSD and %D

☒ Continuing Calibration
Raw Data and Calculation 10% of target analytes – RF or RRF
Raw Data and Calculation 10% of target analytes – %D

☒ Method Blanks
Raw Data and Calculation for one detected target analyte
Review Ion Chromatograms
EIS Recovery for 10% EIS
NIS Response for 10% NIS
Detection Limits verified for one target analyte

☒ Laboratory Control Sample (LCS) and Low Level LCS Results
Review Ion Chromatograms
Raw Data and Calculation for primary compound(s) of concern and 10% of target analytes
Summary Form Verification - % R and RPD

☒ Matrix Spike Results (if applicable)
Review Ion Chromatograms
Raw Data and Calculation for primary compound(s) of concern and 10% of target analytes
Summary Form Verification - % R (and RPD if MS/MSD)

☒ Matrix Duplicate / Associated Field Sample
Review Ion Chromatograms
Raw Data and Calculation for primary compound of concern and 10% of target analytes
Summary Form Verification – RPD using concentration (not %R)

☒ Field Sample PFAS Identification
- Verify ion transitions (precursor/product ion pairs as specified in Method 1633 4th Draft Table 9)
- Ion ratios – use lab criteria, must not exceed 50-150%
- S/N Ratio for positive identification/detection of Target Analytes and EIS-- Quantitation ions and confirmation ions S/N ≥ 3; or if no confirmation ion is expected (Method 1633

4th Draft Table 9), quantitation ion must have S/N ≥10, as described in Method 1633 4th Draft Section 15.1.1: *For target analytes or EISs to be identified, peak responses of the quantitation and confirmation ions must be at least three times the background noise level (S/N 3:1). The quantitation ion must have a S/N ≥ 10:1 if there is no confirmation ion* [specified in Table 9]. *If the S/N ratio is not met due to high background noise, the laboratory must correct the issue (e.g., perform instrument troubleshooting and any necessary maintenance, such as cleaning the ion source, replacing the LC column, or if needed, repeat the cleanup steps to remove background due to the sample matrix). If the S/N ratio is not met but the background is low, then the analyte is to be considered a non-detect.* Note: If lab result is <LOQ and expected confirmation ion is not detected, qualify U at LOD or sample concentration, as appropriate. If lab result is >LOQ and expected confirmation ion is not detected, review raw data and use professional judgment.

- Quantitation ion and confirmation ion maximize simultaneously (±2 sec.)

☒ Field Sample Results
Review Ion Chromatograms
Raw Data and Calculation for all detected analytes including concentration and ion ratios
Extracted Internal Standard for 10% of EIS
Non-extracted Internal Standard for 10% of NIS
Detection limits verified for one analyte per sample
RT ICAL midpoint or initial CCV, ± 0.4 min.

☒ Detection Limits

Notes: Field duplicate RPDs out requiring J qualification.

WSP USA Environment & Infrastructure, Inc
USEPA STAGED VALIDATION CHECKLIST – STAGE 2A
SW-846 Methods – Inorganics

Project: _____Method: _____
Project #: _____ Laboratory and SDG: _____
Date: _____ Reviewer: _____

☐ **USEPA Stage 2A**

1. ☐ **Case Narrative and Data Package Completeness**
   - COC review vs. lab report and Table 1
   - Requested analytical methods performed
   - Target analytes and Reporting Limits
   - Results between MDL and RL qualified estimated (J)

2. ☐ **Holding Time and Sample Preservation/Collection**
   - Sample conditions upon receipt at laboratory
   - Holding times met
   - Collection, preparation, and analysis date verification

3. ☐ **QC Blanks**
   - Completeness and evaluation
   - Method blanks
   - Field QC blanks

4. ☐ **Laboratory Control Samples (Use QAPP/project or lab limits)**
   - Completeness and evaluation
   - Percent Recoveries within limits.
   - RPD if LCSD reported.

5. ☐ **Field Duplicate Precision**
   - Completeness and evaluation
   - Use QAPP Limits or determine project limits

6. ☐ **Lab Duplicate Precision (Use QAPP/project or lab limits)**
   - Completeness and evaluation

7. ☐ **Matrix Spike Results (Use QAPP/project or lab limits)**
   - Completeness and evaluation
   - Percent Recoveries within limits.
   - RPD if MSD reported.

8. ☐ **Serial Dilution (Use %D < 20 aqueous <25 soil for concentration >50X MDL)**

9. ☐ **Post Digestion Spike (Use QAPP/project or lab limits)**

WSP USA Environment & Infrastructure, Inc
USEPA STAGED VALIDATION CHECKLIST – STAGE 4
Inorganics

STAGE 4 REVIEW RECORD

Project:_____Lab and SDG: _____
Method:_____Date: _____
Reviewer:_____

This Checklist is used in conjunction with a Stage 2A or Stage 2B checklist and USEPA national or regional guidelines.

☐ Initial Calibration

☐ Continuing Calibration

☐ Method Blanks
Raw Data and Calculation
Detection limits
IS response (if applicable)

☐ Laboratory Control Sample Results
Raw Data and Calculation
Summary Form Verification
IS response (if applicable)

☐ Matrix Spike Results (if applicable)
Raw Data and Calculation
Summary Form Verification
IS response (if applicable)

☐ Field Sample Results
Raw Data and Calculation
Detection limits
IS response (if applicable)

☐ Interference Check Sample Results
Raw Data and Calculation
IS response (if applicable)

☐ Serial Dilution
Raw Data and Calculation
IS response (if applicable)

☐ Detection Limits

Attachment D

Calculation Sheets (Stage 4 Data Only)

Stage 4 Calculation Checks

SDG: **C3W5473** Analytical Batch: **WS#9038477**

Initial Calibration Relative Response Factors - 11/14/2023 (Instrument LCMS 7 LC MS/MS)

$RF = \frac{Ac}{Ais} X \frac{Cis}{Cc}$ Analyte = **PFBA** Internal Std = **13C4-PFBA**

Ac = Standard Area
Ais = Internal Standard Concentration
Cis = Internal Standard Amount
Cc = Standard Concentration

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	RF reported
1		**9363**	**61907**	**100.000**	**2000.00**	0.00760	**0.001**
2		**37823**	**63556**	**100.000**	**8000.00**	0.00740	**0.001**
3		**90313**	**60771**	**100.000**	**20000.00**	0.00740	**0.001**
4		**182994**	**61203**	**100.000**	**40000.00**	0.00750	**0.001**
5		**327908**	**59858**	**100.000**	**72000.00**	0.00760	**0.001**
6		**440599**	**58328**	**100.000**	**100000.00**	0.00760	**0.001**
7		**709858**	**57874**	**100.000**	**160000.00**	0.00770	**0.001**
8							
9							
					AVG RF =	0.00754	0.00100

RSD = 1.503268 **1.17**

Analyte = **PFOA** Internal Std = **13C8-PFOA**

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	**RF reported**
1	**0.428**	**3319**	**53003**	**10.000**	**0.40**	1.56550	**1.5660**
2	**0.936**	**7577**	**55373**	**10.000**	**0.80**	1.71040	**1.7110**
3	**2.132**	**15435**	**49498**	**10.000**	**2.00**	1.55920	**1.5590**
4	**4.78**	**34875**	**49890**	**10.000**	**5.00**	1.39810	**1.3980**
5	**9.747**	**72123**	**50596**	**10.000**	**10.00**	1.42550	**1.4250**
6	**19.349**	**134369**	**47488**	**10.000**	**20.00**	1.41480	**1.4150**
7	**46.984**	**339888**	**49467**	**10.000**	**50.00**	1.37420	**1.3740**
8	**238.178**	**1591270**	**45685**	**10.000**	**250.00**	1.39330	**1.3930**
9	**902.9210**	**5174245**	**39186**	**10.000**	**1000.00**	1.32040	**1.3200**
					AVG RF =	1.46238	**1.4624**

RSD = 8.443965 **8.44772**

Analyte = **PFNA** Internal Std = **13C9-PFNA**

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	**RF reported**
1	**0.387**	**2356**	**29608**	**5.000**	**0.40**	0.99470	**0.995**
2	**0.877**	**5542**	**30709**	**5.000**	**0.80**	1.12790	**1.128**
3	**2.144**	**11594**	**26277**	**5.000**	**2.00**	1.10310	**1.103**
4	**4.925**	**27413**	**27045**	**5.000**	**5.00**	1.01360	**1.014**
5	**9.629**	**54774**	**27641**	**5.000**	**10.00**	0.99080	**0.991**
6	**19.774**	**105645**	**25961**	**5.000**	**20.00**	1.01730	**1.017**
7	**51.301**	**268245**	**25407**	**5.000**	**50.00**	1.05580	**1.056**
8	**235.704**	**1225180**	**25257**	**5.000**	**250.00**	0.97020	**0.970**
9	**959.729**	**4133740**	**20929**	**5.000**	**1000.00**	0.98760	**0.988**
					AVG RF =	1.029000	**1.029010**

RSD = 5.341840 **5.3425**

Stage 4 Calculation Checks

SDG: **C3W5473** Analytical Batch: **WS#9038477**

Continuing Calibration Verification - 11/14/2023 6:47:47 PM (Instrument LCMS 7 LC MS/MS)

Compound	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	% Recovery Reported	% Recovery Calculated	RPD
PFBA				**2000.000**	**2004.3874**	**100.2**	100.21937	0.02
PFPeA				**1000.000**	**995.54**	**99.5**	99.6	0.05
PFHxA				**500.000**	**512.87**	**102.6**	102.6	0.03
PFHpA				**500.000**	**494.22**	**98.8**	98.8	0.04
PFOA				**500.000**	**478.52**	**95.7**	95.7	0.00

Level	Compound	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	RF reported	RPD
CCV	**PFBA**	**9771**	**64708**	**100.000**	**2000.000**	0.00760	**N/A**	
CCV	**PFPeA**	**5851**	**34939**	**100.000**	**1000.000**	0.01670	**N/A**	
CCV	**PFHxA**	**3131**	**18923**	**100.000**	**500.000**	0.03310	**N/A**	
CCV	**PFHpA**	**3142**	**18813**	**100.000**	**500.000**	0.03340	**N/A**	
CCV	**PFOA**	**2417**	**16439**	**100.000**	**500.000**	0.02940	**N/A**	

Stage 4 Calculation Checks

SDG: **C3W5473** Analytical Batch: **WS#9038477**

Surrogate Recovery

Sample ID: **LORNG_SB06019_04-06_10162023 (XIK615)**

Surrogate	Analyte	Spiked (ng)	Found (ng)	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference (%D)
13C4-PFBA	PFBA	100.0	97.6284	98.0	97.6	0.38
13C5-PFPeA	PFPeA	100.0	98.3341	98.0	98.3	0.34
13C5-PFHxA	PFHxA	100.0	100.828	101.0	100.8	0.17
13C4-PFHpA	PFHpA	100.0	94.0337	94.0	94.0	0.04
13C8-PFOA	PFOA	100.0	92.1582	92.0	92.2	0.17
13C9-PFNA	PFNA					
13C6-PFDA	PFDA					
13C7-PFUnA	PFUnA					
13C2-PFDoA	PFDoA					
13C2-PFTeDA	PFTeDA					
13C3-PFBS	PFBS					
13C3-PFHxS	PFHxS					
13C8-PFOS	PFOS					
13C2-4:2	4:2 FTS					
13C2-6:2	6:2 FTS					
13C2-8:2	8:2 FTS					
13C8-PFOSA	PFOSA					
D3-N-MeFOSA	N-MeFOSA					
D5-N-EtFOSA	N-EtFOSA					
D3-MeFOSAA	MeFOSAA					
D5-EtFOSAA	EtFOSAA					
d7-NMe-FOSE	4:2 FTS					
d9-NEt-FOSE	6:2 FTS					

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK614 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (3.901 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB06019-00-01_10162023 (XIK614)

QC Batch

9038477

Vf = 0.0008 L

Vi = 3.901 g

AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
PFBA / 13C4-PFBA	2281	8032	0.284	7.53355E-05	3769.66015	1.54613	0.00155	0.0016	3.42
PFPeA / 13C5-PFPeA	3750	4428	0.847	1.68214E-04	5034.56295	2.06493	0.00206	0.0020	3.19
PFHxA / 13C5-PFHxA	1755	2463	0.713	3.22617E-04	2208.64063	0.90588	0.00091	0.00089	1.77
PFOS / 13C8-PFOS	1429	428	3.339	4.16742E-04	8011.64138	3.28598	0.00329	0.0033	0.43

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK615 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (3.926 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB06019_04-06_10162023 (XIK615)

QC Batch

9038477

Vf = 0.0008 L

Vi = 3.926 g

AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
PFOA / 13C4-PFOA	2326	17996	0.129	3.13884E-04	411.779466	0.16782	0.00017	0.00017	1.29
PFPeA / 13C5-PFPeA	3179	37501	0.085	1.68214E-04	503.948085	0.20538	0.00021	0.0002	2.23
PFHxA / 13C5-PFHxA	2121	21468	0.099	3.22617E-04	306.239657	0.12480	0.00012	0.00012	3.93
PFOS / 13C8-PFOS	780	3050	0.256	4.16742E-04	613.659984	0.25009	0.00025	0.00025	0.04

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK616 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (3.879 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB06019_08-10_10162023 (XIK616)

QC Batch

9038477

Vf = 0.0008 L

Vi = 3.879 g

AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
PFOA / 13C4-PFOA	3644	17571	0.207	3.13884E-04	660.712996	0.27253	0.00027	0.00028	2.70
PFPeA / 13C5-PFPeA	4725	37627	0.126	1.68214E-04	746.518096	0.30792	0.00031	0.0003	0.67
PFHxA / 13C5-PFHxA	3005	20898	0.144	3.22617E-04	445.709714	0.18385	0.00018	0.00018	2.11
PFOS / 13C8-PFOS	553	3009	0.184	4.16742E-04	440.997355	0.18190	0.00018	0.00018	1.05

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK619 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (4.075 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB16016_00-01_10162023 (XIK619)

QC Batch

9038477

Vf = 0.0008 L

Vi = 4.075 g

AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
PFOA / 13C4-PFOA	1079	16924	0.064	3.13884E-04	203.118457	0.07975	0.00008	0.000081	1.55
PFPeA / 13C5-PFPeA	959	35192	0.027	1.68214E-04	161.999166	0.06361	0.00006	0.000064	0.62
PFHxA / 13C5-PFHxA	934	20130	0.046	3.22617E-04	143.81873	0.05647	0.00006	0.000056	0.83
PFOS / 13C8-PFOS	1865	2829	0.659	4.16742E-04	1581.89965	0.62111	0.00062	0.000620	0.18

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK620 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (4.245 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID **QC Batch**

LORNG_SB16016_03-05_10162023 (XIK620) **9038477**

Vf = **0.0008** L

Vi = **4.245** g

AF = **2**

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
PFHxS / 13C3-PFOA	**187**	**3840**	0.049	**3.49250E-04**	139.435775	0.05256	0.00005	**0.000053**	0.84
					#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
					#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
PFOS / 13C8-PFOS	**826**	**3032**	0.272	**4.16742E-04**	653.708138	0.24639	0.00025	**0.00025**	1.45

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK621 Extract
Calibration I y = m*x
Where
y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)
x = Final instrument concentration (ng/L)
m = From calibration equation (analyte specific)

Calculation for Concentration in Sample
Sample Concentration (ng/g) = Cs x Vf / Vi x AF
Where: Cs = Final instrument concentration (ng/L)
Vf = Final sample volume (0.0008 L)
Vi = Initial sample weight (4.206 g)
AF = Aliquot Factor = 2

Sample ID / Lab ID | **QC Batch**
LORNG_SB16017_00-01_10162023 (XIK621) | 9038477

Vf = 0.0008 L
Vi = 4.206 g
AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
*			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
PFOS / 13C8-PFOS	1948	3204	0.608	4.16742E-04	1458.91331	0.55498	0.00055	0.00056	0.90

Sample Concentration Recalculation - Job # C3W5473

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIK622 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracted internal standard analyte)

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (4.321 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID **QC Batch**

LORNG_SB16017_02-04_10162023 (XIK622) 9038641

Vf = 0.0008 L

Vi = 4.321 g

AF = 2

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs	ng/g Calculated Concentration	mg/kg Calculated Concentration	mg/kg Reported Concentration	RPD
No Detections in Samples			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

LCS Recalculation - Job # C3W5473

9038477:SPIKE	QC Batch	9038477			m value from Curve		
Analyte	**IS**	**Area**	**calculated conc**	**SPIKE AMT**	**Ave. from IC**	**Calculated %R**	**Reported %R**
PFOA	13C8-PFOA	86774	18136.17502	18000	0.000307255	100.76%	101
PFNA	13C9-PFNA	71110	16658.77652	18000	0.000707663	92.55%	93
PFBS	13C3-PFBS	28977	16265.08619	15966	0.000376569	101.87%	102
PFHxS	13C3-PFHxS	19573	16146.06202	16452	0.00034925	98.14%	98
PFOS	13C8-PFOS	17665	16160.2618	16704	0.000416742	96.74%	97
PFBA	13C4-PFBA	320265	71738.47044	72000	7.52789E-05	99.64%	100

IS	Area
13C8-PFOA	15572
13C9-PFNA	6032
13C3-PFBS	4731
13C3-PFHxS	3471
13C8-PFOS	2623
13C4-PFBA	59304

DF
1
1
1
1
1
1

MS/MSD Recalculation - Job # C3W5473

XIK625-MS QC Batch 9038477

Analyte	IS	Area	Ave. from IC	X (on column)	Spike Amount (ug/L)	Adjusted Spike (ng/g)	Final Result (ng/g)	Native Result (ng/g)	%R Calculated
PFOA	13C8-PFOA	72807	0.000307255	22927.8394	18000	7.331228999	9.338291174	2.2432	96.78%
PFNA	13C9-PFNA	64628	0.000707663	24122.03054	18000	7.331228999	9.824673878	2.505	99.84%
PFBS	13C3-PFBS	18639	0.000376569	15997.72383	15966	6.502800122	6.515720936	0.0474	99.47%
PFHxS	13C3-PFHxS	14787	0.00034925	19747.81844	16452	6.700743305	8.043098847	1.3061	100.54%
PFOS	13C8-PFOS	95725	0.000416742	148192.6683	16704	6.803380511	60.35746596	47.9	183.11%

IS	Area	%R Reported
13C8-PFOA	10335	97%
13C9-PFNA	3786	101%
13C3-PFBS	3094	99%
13C3-PFHxS	2144	101%
13C8-PFOS	1550	NC

Sample Vol: 3.9284
Inj Vol: 1
Ext Vol: 0.0008
AF: 2

XIK625-MSD

Analyte	IS	Area	Ave. from IC	X (on column)	Spike Amount (ug/L)	Adjusted Spike (ng/g)	Final Result (ng/g)	Native Result (ng/g)	%R Calculated	RPD Calculated
PFOA	13C8-PFOA	110643	0.000307255	23144.23006	18000	7.331228999	9.426425033	2.2432	97.98%	1.23%
PFNA	13C9-PFNA	99196	0.000707663	22960.54793	18000	7.331228999	9.351613047	2.505	93.39%	-6.68%
PFBS	13C3-PFBS	28652	0.000376569	16181.8516	15966	6.502800122	6.590714427	0.0474	100.62%	1.15%
PFHxS	13C3-PFHxS	22506	0.00034925	19014.74824	16452	6.700743305	7.744526317	1.3061	96.09%	-4.53%
PFOS	13C8-PFOS	142120	0.000416742	138403.6477	16704	6.803380511	56.37049087	47.9	124.50%	-38.10%

IS	Area	%R Reported	RPD Reported
13C8-PFOA	15559	99	1.2%
13C9-PFNA	6105	94	6.6%
13C3-PFBS	4702	101	1.2%
13C3-PFHxS	3389	97	4.5%
13C8-PFOS	2464	NC	0.0%

Sample Vol: 3.8801
Inj Vol: 1
Ext Vol: 0.0008
AF: 2

VALIDATA
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(770) 232-0130
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DATA VALIDATION SUMMARY REPORT - PFAS

COMPANY:	WSP USA Environment and Infrastructure
PROJECT NAME:	Loring AFB
SITE NAME:	Loring AFB RI-TO 1048
CONTRACTED LAB:	Bureau Veritas Laboratories, Mississauga, Ontario, Canada
PROJECT NUMBER:	775361701
QA/QC LEVEL:	EPA Stage 2B Validation Manual (S4VM)
ANALYTICAL METHOD:	EPA Draft Method 1633
VALIDATION GUIDELINES:	Quality Assurance Project Plan (QAPP) TO 1048 Quality Program Plan September 2023, USEPA Staged Validation Checklist – Stage 2B, Data Validation Guidelines Module 6, November 2022, Professional judgment
SAMPLE MATRIX:	Soil
TYPES OF ANALYSES:	Per fluorinated Alkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectroscopy (LC-MS/MS)
DATA VALIDATION DATE:	March 9, 2024
DATA REVIEWER(S):	Robert Thielke
SECONDARY REVIEWER(S):	Timothy Morris, Kevin Harmon
SDG NUMBER:	C3W7649
SAMPLING DATE(S):	October 22, 2023
SAMPLES:	See Table 1

Forty PFAS analytes to be Validated

Analyte	Acronym	Extracted Internal Standard
Perfluorobutanoic acid	PFBA	13C4-PFBA
Perfluoropentanoic acid	PFPeA	13C5-PFPeA
Perfluorohexanoic acid	PFHxA	13C5-PFHxA
Perfluoroheptanoic acid	PFHpA	13C4-PFHpA
Perfluorooctanoic acid	PFOA	13C8-PFOA
Perfluorononanoic acid	PFNA	13C9-PFNA
Perfluorodecanoic acid	PFDA	13C6-PFDA
Perfluoroundecanoic acid	PFUnA	13C7-PFUnA
Perfluorododecanoic acid	PFDoA	13C2-PFDoA
Perfluorotridecanoic acid	PFTrDA	13C2-PFTeDA
Perfluorotetradecanoic acid	PFTeDA	13C2-PFTeDA
Perfluorobutanesulfonic acid	PFBS	13C3-PFBS
Perfluoropentanesulfonic acid	PFPeS	13C3-PFHxS
Perfluorohexanesulfonic acid	PFHxS	13C3-PFHxS
Perfluoroheptanesulfonic acid	PFHpS	13C8-PFOS
Perfluorooctanesulfonic acid	PFOS	13C8-PFOS
Perfluorononanesulfonic acid	PFNS	13C8-PFOS
Perfluorodecanesulfonic acid	PFDS	13C8-PFOS
Perfluorododecanesulfonic acid	PFDoS	13C8-PFOS
1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2 FTS	13C2-4:2FTS
1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2 FTS	13C2-6:2FTS
1H,1H,2H,2H-Perfluorodecane sulfonic	8:2 FTS	13C2-8:2FTS
Perfluorooctanesulfonamide	PFOSA	13C8-PFOSA
N-ethyl perfluorooctanesulfonamide	EtFOSA	D5-EtFOSA
N-methyl perfluorooctanesulfonamide	MeFOSA	D3-MeFOSA
N-ethyl perfluorooctanesulfonamidoacetic acid	EtFOSAA	D5-EtFOSAA
N-methyl perfluorooctanesulfonamidoacetic acid	MeFOSAA	D3-MeFOSAA
N-ethyl perfluorooctanesulfonamidoethanol	EtFOSE	D9-EtFOSE
N-methyl perfluorooctanesulfonamidoethanol	MeFOSE	D7-MeFOSE
Hexafluoropropylene oxide dimer acid	HFPO-DA	13C3HFPO-DA
4,8-Dioxa-3-H-perfluorononanoic acid	ADONA	13C3HFPO-DA
Perfluoro-3-methoxypropanoic acid	PFMPA	13C5-PFPeA
Perfluoro-4-methoxybutanoic acid	PFMBA	13C5-PFPeA
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	13C5-PFHxA
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	13C3HFPO-DA
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	13C3HFPO-DA
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	13C5-PFHxA
3-Perfluoropropyl propanoic acid	3:3FTCA	13C5-PFPeA
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	13C5-PFHxA
3-Perfluoroheptyl propanoic acid	7:3FTCA	13C5-PFHxA

QAPP Validation Qualifiers

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Bureau Veritas Laboratories – SDG: C3W7649

PFAS (Per- and polyfluoroalkyl substances)

SUMMARY

I.) General:

The samples were extracted and analyzed by LC/MS/MS for a selected list of PFAS using EPA Draft Method 1633. The results for PFHxS, PFOA, PFOS, PFNA, PFOSA, MeFOSA, EtFOSA, MeFOSAA, EtFOSAA, MeFOSE and EtFOSE include both linear and branched isomers. Results for all other analytes include the linear isomers only.

II.) Overall Assessment of Data:

The overall assessment of data was acceptable. Data qualifiers are summarized in Attachment A, Table 3 "Summary of Data Validation Actions".

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete and accurate case narrative in the data package. The data package contains results for all samples and method types listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The Chain of Custody records did not indicate if samples were received within the project QAPP temperature requirements of ≤ 10°C. All holding time criteria were met. No data were qualified.

III.) Mass Calibration:

INSTRUMENT: LCMS 7

Mass calibration was completed on October 13, 2023, to original equipment manufacturer's specifications.

IV.) LC-MS Tune:

Autotunes were performed on instrument LCMS 7 with acceptable results. All masses were acceptable. All instrument tunes met the project QAPP criteria.

V.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met. No data qualification was necessary.

VI.) Instrument Sensitivity Check (ISC):

Analyte concentrations were at LOQ. The ISC samples met all project QAPP requirements. No data qualification was necessary.

VII.) Continuing Calibration (CCV):

All Continuing Calibration Verification criteria met project QAPP criteria with the following exceptions:

- ADONA, 9Cl-PF3ONS, 11Cl-PF3OUdS, 3:3-FTCA, 5:3-FTCA, and 7:3-FTCA exceeded the %D CCV criteria. The ADONA, 9Cl-PF3ONS, 11Cl-PF3OUdS, 3:3-FTCA, 5:3-FTCA, and 7:3-FTCA results in both samples were qualified as estimated (J/UJ).

VIII.) Blanks:

Instrument Blanks:

The instrument blanks met all project QAPP criteria. No data qualification was necessary.

Method Blanks:

A method blank was prepared and analyzed for each preparation batch. All results were non-detected.

Field Blanks:

Sample LORNG_EB103_10182023 was associated with this SDG.

Equipment Blanks (Rinse Blanks):

The rinse blank sample LORNG_EB103_10182023 was associated with this SDG. The following result was detected in the rinse blank sample:

Client Sample ID	**Analyte**	**Blank Value (ng/l)**
LORNG_EB103_10182023	PFOSA	0.23 J

The PFOSA result in both samples were qualified as estimated (J+).

IX.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

The MS / MSD analysis was performed on a sample not associated with the samples in the SDG.

X.) Laboratory Control Samples / Laboratory Control Sample Duplicate (LCS / LCSD):

A spiked blank (LCS) was prepared and analyzed for the soil preparation batch. All LCS recoveries were within acceptance criteria.

XI.) Field Duplicates (FD):

The following FD samples were identified in the SDG. Relative Percent Differences (RPDs) for the detected analyte results were calculated to evaluate the field sampling and laboratory precision for the sample matrix.

Parent Sample ID (Lab ID)	**Duplicate Sample ID (Lab ID)**
LORNG_SB21006_00-02_10182023 (XIW356)	LORNG_SB21006_00-02_10182023FD (XIW357)

For the FD pair listed above, the following table lists RPDs and qualification actions.

SAMPLE/DUPLICATE	**ANALYTE**	**RPD**	**QC LIMIT**	**QUALIFICATION**
LORNG_SB21006_00-02_10182023 / LORNG_SB21006_00-02_10182023FD	PFHxS PFOS	44% 37%	For Soils </= 30%	J

XII.) Extracted Internal Standard Analytes (EIS):

All EIS in the samples in this SDG reported recoveries within criteria.

XIII.) Ion Transitions:

Ion transition criteria were met. No qualification was necessary.

XIV.) Ion Ratio:

All ion ratio criteria were met. No data qualification was necessary.

XV.) Reporting limits (RLs):

All LOQs (Limit of Quantitation) were acceptable.

XVI.) Bile Salt Standard Retention Time Check:

The bile salt standard met the method retention time requirements.

XVII.) Reanalysis

Reanalysis was not required for any samples.

Attachment A

Tables

Table 1

Summary of Samples and Analytical Methods

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7649

						Method Class	PFAS	WetChem	
						Analysis Method	E1633DR	A2540G	D297487
						Fraction	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount
C3W7649	SB21006	LORNG_SB21006_00-02_10182023	XIW356	10/18/2023	SO	N	40	1	1
		LORNG_SB21006_00-02_10182023FD	XIW357	10/18/2023	SO	FD	40	1	1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/23/24
Checked by: RT
Date: 3/19/24

Table 2

Summary of Analytical Results

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7649

			SDG	C3W7649			
			Location	SB21006			
			Sample Date	10/18/2023			
			Sample ID	LORNG_SB21006_00-02_10182023		LORNG_SB21006_00-02_10182023FD	
			QC Code	N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0003	U	0.00037	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00022	J	0.00022	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00017	J	0.00022	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000085	J	0.00013	J
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00024	J	0.00039	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.00019	U	0.00014	J
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00015	U	0.00019	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000087	J	0.00013	J
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00015	U	0.00019	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00015	U	0.00019	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00015	U	0.00019	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00013	U	0.00016	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00014	U	0.00017	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00083	J	0.0013	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00018	U	0.00073	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0089	J	0.013	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00018	U	0.00022	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000064	J	0.00018	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00024	U	0.0003	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00056	U	0.00069	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00056	U	0.00069	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00058	U	0.00072	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0021	J+	0.0026	J+
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00015	U	0.00019	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000075	U	0.000093	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00024	U	0.0003	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00024	U	0.0003	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0019	U	0.0023	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0024	U	0.003	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0003	U	0.00037	U

Prepared by: AKN
Date: 3/13/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7649

			SDG	C3W7649			
			Location	SB21006			
			Sample Date	10/18/2023			
			Sample ID	LORNG_SB21006_00-02_10182023		LORNG_SB21006_00-02_10182023FD	
			QC Code	N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00056	UJ	0.00069	UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00015	U	0.00019	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0003	U	0.00037	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0038	U	0.0046	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00056	UJ	0.00069	UJ
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00056	UJ	0.00069	UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00043	U	0.00053	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0012	UJ	0.0015	UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0062	UJ	0.0076	UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0062	UJ	0.0076	UJ

Prepared by: AKN
Date: 3/13/24
Checked by: RT
Date: 3/19/24

Table 3

Summary of Data Validation Actions

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7649

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7649	E1633DR	T	XIW356	LORNG_SB21006_00-02_10182023	Perfluorohexanesulfonic acid (PFHxS)	0.00083		0.00083	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0089		0.0089	J	FDD	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0021		0.0021	J+	EBL	MG/KG
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.00056	U	0.00056	UJ	CVHL	MG/KG
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.00056	U	0.00056	UJ	CVHL	MG/KG
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.00056	U	0.00056	UJ	CVHL	MG/KG
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0012	U	0.0012	UJ	CVHL	MG/KG
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.0062	U	0.0062	UJ	CVHL	MG/KG
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.0062	U	0.0062	UJ	CVHL	MG/KG
			XIW357	LORNG_SB21006_00-02_10182023FD	Perfluorohexanesulfonic acid (PFHxS)	0.0013		0.0013	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.013		0.013	J	FDD	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0026		0.0026	J+	EBL	MG/KG
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.00069	U	0.00069	UJ	CVHL	MG/KG
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.00069	U	0.00069	UJ	CVHL	MG/KG
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.00069	U	0.00069	UJ	CVHL	MG/KG
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0015	U	0.0015	UJ	CVHL	MG/KG
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.0076	U	0.0076	UJ	CVHL	MG/KG
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.0076	U	0.0076	UJ	CVHL	MG/KG

Prepared by:AKN
Date:3/13/24
Checked by: RT
Date: 3/19/24

Table 4

Field Duplicate RPD Summary

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W7649
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3W7649	LORNG_SB21006_00-02_10182023	LORNG_SB21006_00-02_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0003	U	0.00037	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00022	J	0.00022	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00017	J	0.00022	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.000085	J	0.00013	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00024	J	0.00039	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00019	U	0.00014	J	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00015	U	0.00019	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000087	J	0.00013	J	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00015	U	0.00019	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00015	U	0.00019	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00015	U	0.00019	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00013	U	0.00016	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00014	U	0.00017	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00083		0.0013		44	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00018	U	0.00073		NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0089		0.013		37	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00018	U	0.00022	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000064	J	0.00018	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00024	U	0.0003	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00056	U	0.00069	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00056	U	0.00069	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00058	U	0.00072	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0021		0.0026		21	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00015	U	0.00019	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000075	U	0.000093	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00024	U	0.0003	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00024	U	0.0003	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0019	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0024	U	0.003	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0003	U	0.00037	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00056	U	0.00069	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00015	U	0.00019	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0003	U	0.00037	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0038	U	0.0046	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00056	U	0.00069	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00056	U	0.00069	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00043	U	0.00053	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0012	U	0.0015	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0062	U	0.0076	U	NC	

Prepared by: AKN 2/2/24
Checked by: RT 3/19/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W7649
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0062	U	0.0076	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	46		53		14	
				TOTAL SOLIDS (PERCENT)	54		47		14	

Prepared by: AKN 2/2/24
Checked by: RT 3/19/24

Attachment B

Completed DV Checklist with Notes

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 2B
PFAS – DoD QSM 5.4 Table B-24

Project Task:
Method: 1633 **Lab and SDG: C3W7649**
Date: 3/9/24 **Reviewer: R.Thielke**

☐ **USEPA Stage 2B**

NOTE: *Per QSM 5.4 Table B-24: In addition to the requirements specified in Table B-24, ALL OF THE REQUIREMENTS CONTAINED IN EPA DRAFT METHOD 1633 (CURRENT VERSION) MUST BE MET.*

X **1.** ☐ **Case Narrative and Data Package Completeness**
- COC review
- Requested compound list reported
- Detection Limits meet QAPP and PALs and correct analysis level was reported (low/standard level)
- Results between MDL and LOQ qualified estimated (J), NDs reported to LOD
- Confirm transition ions in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard Used for Quantification*" table in current draft Method 1633) were used for all analytes

X **2.** ☐ **Holding Time and Sample Preservation/Collection**
- Sample conditions upon receipt at laboratory
- Holding times met (See Section 8.5 Holding Times in Method 1633 for more information and exceptions re NFDHA):
- ----Aqueous samples 28 days to extraction if stored by lab at 0-6 degrees C and protected from light/90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Soil/Solid samples 90 days to extraction if stored by lab at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Tissue samples 90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Biosolids samples 90 days to extraction if stored at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- Collection, preparation, and analysis date verification

X **3.** ☐ **QC Blanks**
- Completeness and evaluation
- Method blanks (preparation) ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Instrument blanks ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Field QC blanks –See discussion in Module 6 Section 3.3.1
- For all blank qualification actions follow Module 6 Table III (below) and discussions in Module 6 Section 3.3.1 and 4.7, and use ≤2x blank concentration for qualifying result U if sample result is > LOD and ≤ LOQ—

Sample Result	Validated Result	Validation Qualifier
Non-detect or detect ≤LOD	Report at LOD	U
>LOQ but ≤5x blank	Report at sample result	J+
>LOQ and >5x blank	Report at sample result	None

See Report for Field Blank Outliers

X **4.** **Instrument Tuning and Instrument Sensitivity Check (ISC)**

- Mass Calibration performed annually or as recommended by the instrument manufacturer, whichever is more frequent, per Method 1633 Section 10.1
- Mass Calibration Verification ± 0.2 amu per Method 1633 (not specified in Table B-24)
- Valid Mass Calibration Verification before ICAL and sample analysis
- ISC concentrations at LOQ and recoveries ±30%
- Valid ISC prior to sample analysis

X **5.** **Initial Calibration**

- Sequence Log and Preparation Log Review
- Quantitative/Qualitative Standard Review - Confirm analytes with branched isomers in the initial calibration standards are identified in the lab report and that areas of branched isomers area included in the calibration response areas for those analytes (See Method 1633 Sections 10.1.1 and 15.1.3).
- Confirm lowest standard concentration is ≤ the LOQ.
- %RSD RFs ≤ 20; linear $r^2 \geq 0.99$ (DoD QSM 5.4 B-24). If %RSD >30 use judgment to J or R.
- Calibration standards recovered 70-130% of true value
- ICV ±30%
- Instrument Blank Review

X **6.** **Continuing Calibration**

- Verify the CCV was analyzed every 10 samples in sequence.
- %D ±30%
- Use judgment to J or R for %D > 50
- Instrument Blank Review

See Report for Outliers

X **7.** **Laboratory Control Samples** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)

- Completeness and evaluation
- Percent Recoveries within criteria
- RPD ≤30 if LCSD reported
- Ion ratios within limit for all analytes

X **8.** **Matrix Duplicate (Lab Duplicate) and Field Duplicate Precision**

- Completeness and evaluation
- Lab Duplicate RPD ≤ 30
- Field Duplicate use QAPP Limits or determine project limits

See Report for Outliers

X **9.** **Matrix Spike Results** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)

- Completeness and evaluation
- Recovery within criteria and RPD ≤ 30

X **10.** **Ion Abundance Ratio (IAR)**

- As defined in Method 1633 4th Draft Section 14.3.5: AreaQ1/AreaQ2 where Q1 and Q2 are primary and secondary transition masses for detected compounds. Acceptance criteria are based on comparison with ion ratios established by the ICAL midpoint standard or daily CCV. If secondary transition masses are identified in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard*

Used for Quantification" table in current draft Method 1633), IAR must be within ±50% of IAR established for the ICAL midpoint standard or daily CCV per Section 15.1.3. Check ion ratios reported for LCS and samples.

X **11. Extracted Internal Standard (EIS)**

- Lab Recovery Limits B-24 (%R 20-150 vs ICAL midpoint or CCV)
- J for %R <20 and >200 (Module 6)
- R ND results if <10 and use judgment for detections
- RTs for samples and batch QC 0.40 minutes of CCV or initial calibration (if no CCV run)
- Analytes RT within +/- 0.1 minutes of their associated EIS

X **12. Non-Extracted Internal Standard (NIS) Recovery (%R >30 vs ICAL midpoint or CCV)**

- DoD Module 6 criteria: J/UJ results if <30 or use professional judgment for R (Note: Method 1633 Section 14.9 specifies NIS recoveries within 50-200% vs CCV)
- RTs for samples 0.40 minutes of CCV or initial calibration (if no CCV run)

X **13. Bile Salt Standard Retention Time (RT) Check**

Did the laboratory analyze a bile salt standard? (required by Method 1633/QSM 5.4 B-24 for all sample matrices) YES NO (circle one)

Is the RT of the bile salt standard >1 minute from the RT window for PFOS (including linear and branched isomers)? YES NO (circle one)

NOTE: Three bile acids (TDCA, TCDCA, and TUDCA) have the same (<1 amu) primary transition masses as PFOS: m/z 498.9 ->79.9 for PFOS, and m/z 499.2 ->79.9 for the bile acids. As a result, the presence of these bile acids in samples can cause high bias to PFOS concentrations if co-eluting with PFOS. The bile salt standard must demonstrate chromatographic separation so there is no co-elution with any PFOS isomer.

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.validatausa.com

DATA VALIDATION SUMMARY REPORT - PFAS

COMPANY:	WSP USA Environment and Infrastructure
PROJECT NAME:	Loring AFB
SITE NAME:	Loring AFB RI-TO 1048
CONTRACTED LAB:	Bureau Veritas Laboratories, Mississauga, Ontario, Canada
PROJECT NUMBER:	775361701
QA/QC LEVEL:	EPA Stage 4 Validation Manual (S4VM)
ANALYTICAL METHOD:	EPA Draft Method 1633
VALIDATION GUIDELINES:	Quality Assurance Project Plan (QAPP) TO 1048 Quality Program Plan September 2023, USEPA Staged Validation Checklist – Stage 2B and Stage 4, Data Validation Guidelines Module 6, November 2022, Professional judgment
SAMPLE MATRIX:	Soil
TYPES OF ANALYSES:	Per fluorinated Alkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectroscopy (LC-MS/MS)
DATA VALIDATION DATE:	February 22, 2024
DATA REVIEWER(S):	Robert Thielke
SECONDARY REVIEWER(S):	Timothy Morris, Kevin Harmon
SDG NUMBER:	C3W7688
SAMPLING DATE(S):	October 16-17, 2023
SAMPLES:	See Table 1

Analyte	Acronym	Extracted Internal Standard
Perfluorobutanoic acid	PFBA	13C4-PFBA
Perfluoropentanoic acid	PFPeA	13C5-PFPeA
Perfluorohexanoic acid	PFHxA	13C2-PFHxA
Perfluoroheptanoic acid	PFHpA	13C4-PFHpA
Perfluorooctanoic acid	PFOA	13C4-PFOA
Perfluorononanoic acid	PFNA	13C5-PFNA
Perfluorodecanoic acid	PFDA	13C2-PFDA
Perfluoroundecanoic acid	PFUnA	13C2-PFUnA
Perfluorododecanoic acid	PFDoA	13C2-PFDoA
Perfluorotridecanoic acid	PFTrDA	13C2-PFTeDA
Perfluorotetradecanoic acid	PFTeA	13C2-PFTeDA
Perfluorobutanesulfonic acid	PFBS	13C3-PFBS
Perfluoropentanesulfonic acid	PFPeS	13C5-PFPeA
Perfluorohexanesulfonic acid	PFHxS	18O2-PFHxS
Perfluoroheptanesulfonic acid	PFHpS	13C4-PFHpA
Perfluorooctanesulfonic acid	PFOS	13C4-PFOS
Ethylperfluorooctanesulfonamidoacetic acid	EtFOSAA	D5-EtFOSAA
Methylperfluorooctanesulfonamidoacetic acid	MeFOSAA	D3-MeFOSAA
4:2 Fluorotelomersulfonic acid	4:2 FTS	13C2-4:2FTS
6:2 Fluorotelomersulfonic acid	6:2 FTS	13C2-6:2FTS
8:2 Fluorotelomersulfonic acid	8:2 FTS	13C2-8:2FTS
Hexafluoropropylene oxide dimer acid	HFPO-DA	13C3-HFPO-DA
4,8-dioxa-3H-perfluorononanoic acid	ADONA	13C4-PFHpA
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	13C2-PFDoA
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	13C8-PFOS
Perfluoro-3-methoxypropanoic acid	PFMPA	13C2PFHxA
Perfluoro-4-methoxybutanoic acid	PFMBA	13C3-PFPeA
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	13C3-PFBS
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	13C3-PFHxA

QAPP Validation Qualifiers

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Bureau Veritas Laboratories – SDG: C3W7688

PFAS (Per- and polyfluoroalkyl substances)

SUMMARY

I.) General:

The samples were extracted and analyzed by LC/MS/MS for a selected list of PFAS using EPA Draft Method 1633. The results for PFHxS, PFOA, PFOS, PFNA, PFOSA, MeFOSA, EtFOSA, MeFOSAA, EtFOSAA, MeFOSE and EtFOSE include both linear and branched isomers. Results for all other analytes include the linear isomers only.

II.) Overall Assessment of Data:

The overall assessment of data was acceptable. Data qualifiers are summarized in Attachment A, Table 3 "Summary of Data Validation Actions".

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete and accurate case narrative in the data package. The data package contains results for all samples and method types listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The Chain of Custody records did not indicate if samples were received within the project QAPP temperature requirements of ≤ 10°C. All holding time criteria were met. No data were qualified.

III.) Mass Calibration:

INSTRUMENT: LCMS 7

Mass calibration was completed on October 13, 2023, to original equipment manufacturer's specifications for analytical batches 7985688.

IV.) LC-MS Tune:

Autotunes were performed on instrument LCMS 7 with acceptable results. All masses were acceptable. All instrument tunes met the project QAPP criteria.

V.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met. The ICALs and ICVs met all project QAPP requirements. No data qualification was necessary.

VI.) Instrument Sensitivity Check (ISC):

Analyte concentrations were at LOQ. The ISC samples met all project QAPP requirements. No data qualification was necessary.

VII.) Continuing Calibration (CCV):

All Continuing Calibration Verification criteria associated with the reported sample results met project QAPP criteria.

VIII.) Blanks:

Instrument Blanks:

The instrument blanks met all project QAPP criteria. No data qualification was necessary.

Method Blanks:

A method blank was prepared and analyzed for each preparation batch. There were no detections in the method blanks. No data qualification was needed.

There were no Field and Equipment Blanks present in this SDG. LORNG_EB102_10172023 was associated with the samples in this SDG. However, the Equipment Blank was not included with this SDG.

Field Blanks:

There were no field blanks associated with this SDG. No data qualification was necessary.

Equipment Blanks (Rinse Blanks):

LORNG_EB102_10172023 was associated with the samples in this SDG but was reported in SDG C3W5473. All results were non-detected and no action was taken.

IX.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analysis was performed on the following SDG samples:

Client Sample ID	Laboratory ID	QA/QC Batch
LORNG_SB18046_00-01_10172023	XIW537	9042122
LORNG_SB18045_00-01_10172023	XIW534	9041407

The Percent Recoveries (%Rs) and Relative Percent Differences (RPDs) met project QAPP criteria .

X.) Laboratory Control Samples / Laboratory Control Sample Duplicate (LCS / LCSD):

A spiked blank (LCS) was prepared and analyzed for the soil preparation batches. All LCS recoveries met project QAPP criteria. No data qualification was necessary.

XI.) Field Duplicates (FD):

The following FD samples were identified in the SDG. Relative Percent Differences (RPDs) for the detected analyte results were calculated to evaluate the field sampling and laboratory precision for the sample matrix. RPD results for Field Duplicates were presented in Table 4.

Parent Sample ID (Lab ID)	Duplicate Sample ID (Lab ID)
LORNG_SB18048_00-01_10172023 (XIW553)	LORNG_SB18048_00-01_10172023FD (XIW554)
LORNG_SB18041_06-08_10172023 (XIW545)	LORNG_SB18041_06-08_10172023FD (XIW546)

For FD pairs listed above, the following table lists RPDs and qualification actions.

SAMPLE/DUPLICATE	ANALYTE	RPD	QC LIMIT	QUALIFICATION
LORNG_SB18048_00-01_10172023 / LORNG_SB18048_00-01_10172023FD	PFOA PFNA	75% 73%	For results <LOQ +/- LOQ	J
	PFHxS PFOS	33% 44%	For Soils </= 30%	J

The PFOA, PFNA, PFHxS, and PFOS results in samples LORNG_SB18048_00-01_10172023 and LORNG_SB18048_00-01_10172023FD are qualified as estimated (J).

XII.) Extracted Internal Standard Analytes (EIS):

All EIS in the samples in this SDG reported recoveries within criteria. No data were qualified.

XIII.) Ion Transitions:

Ion transition criteria were met. No qualification was necessary.

XIV.) Ion Ratio:

All ion ratio criteria were met. No data qualification was necessary.

XV.) Reporting limits (RLs):

All LOQs (Limit of Quantitation) were acceptable. Due to high concentrations, dilutions were required for PFOS in samples LORNG_SB18043_00-01_10172 and LORNG_SB18044_00-01_10172.

XVI.) Bile Salt Standard Retention Time Check:

The bile salt standard met the method retention time requirements.

XVII.) Reanalysis

Sample LORNG_SB18033_07-09_10172 was re-extracted and re-analyzed due to unacceptable native internal standard recoveries.

Attachment A

Tables

Table 1

Summary of Samples and Analytical Methods

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

					Method Class		PFAS	WetChem	
					Analysis Method		E1633DR	A2540G	D297487
					Fraction		T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount
C3W7688	SB18033	LORNG_SB18033_00-01_10172023	XIW555	10/17/2023	SO	N	40	1	1
		LORNG_SB18033_07-09_10172023	XIW556	10/17/2023	SO	N	40	1	1
	SB18041	LORNG_SB18041_00-01_10172023	XIW544	10/17/2023	SO	N	40	1	1
		LORNG_SB18041_06-08_10172023	XIW545	10/17/2023	SO	N	40	1	1
		LORNG_SB18041_06-08_10172023FD	XIW546	10/17/2023	SO	FD	40	1	1
		LORNG_SB18041_11-13_10172023	XIW547	10/17/2023	SO	N	40	1	1
	SB18042	LORNG_SB18042_00-01_10172023	XIW548	10/17/2023	SO	N	40	1	1
		LORNG_SB18042_07-09_10172023	XIW549	10/17/2023	SO	N	40	1	1
	SB18043	LORNG_SB18043_00-01_10172023	XIW533	10/17/2023	SO	N	40	1	1
	SB18044	LORNG_SB18044_00-01_10172023	XIW550	10/17/2023	SO	N	40	1	1
	SB18045	LORNG_SB18045_00-01_10172023	XIW534	10/17/2023	SO	N	40	1	1
		LORNG_SB18045_07-09_10172023	XIW535	10/17/2023	SO	N	40	1	1
		LORNG_SB18045_13-15_10172023	XIW536	10/17/2023	SO	N	40	1	1
	SB18046	LORNG_SB18046_00-01_10172023	XIW537	10/17/2023	SO	N	40	1	1
		LORNG_SB18046_02-04_10172023	XIW551	10/17/2023	SO	N	40	1	1
	SB18047	LORNG_SB18047_00-01_10172023	XIW552	10/17/2023	SO	N	40	1	1
	SB18048	LORNG_SB18048_00-01_10172023	XIW553	45216	SO	N	40	1	1
		LORNG_SB18048_00-01_10172023FD	XIW554	10/17/2023	SO	FD	40	1	1
	SB18049	LORNG_SB18049_00-01_10162023	XIW538	10/16/2023	SO	N	40	1	1
		LORNG_SB18049_02-04_10162023	XIW539	10/16/2023	SO	N	40	1	1
	SB18052	LORNG_SB18052_00-01_10172023	XIW540	10/17/2023	SO	N	40	1	1
		LORNG_SB18052_01-02_10172023	XIW541	10/17/2023	SO	N	40	1	1
	SB18053	LORNG_SB18053_00-01_10172023	XIW542	10/17/2023	SO	N	40	1	1
		LORNG_SB18053_04-06_10172023	XIW543	10/17/2023	SO	N	40	1	1

Notes:
N = Total
Shading = Stage 4 Validation
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/19/24
Checked by: RT
Date: 3/19/24

Table 2

Summary of Analytical Results

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG											
			Location	SB18033				SB18041						
			Sample Date	10/17/2023				10/17/2023						
			Sample ID	LORNG_SB18033_00-01_10172023		LORNG_SB18033_07-09_10172023		LORNG_SB18041_00-01_10172023		LORNG_SB18041_06-08_10172023		LORNG_SB18041_06-08_10172023FD		LORNG_SB18041_11-13_10172023	
			QC Code	N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0002	U	0.00015	J	0.00017	J	0.00019	U	0.00019	U	0.0002	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0001	U	0.00015	J	0.00006	J	0.000096	U	0.000093	U	0.000099	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0001	U	0.00013	J	0.000054	J	0.000096	U	0.000093	U	0.000099	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0001	U	0.00016	J	0.000088	J	0.000096	U	0.000093	U	0.000099	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0001	U	0.00033		0.00013	J	0.000096	U	0.000093	U	0.000099	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00012	U	0.0003		0.00013	J	0.00012	U	0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0001	U	0.000085	J	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0001	U	0.00009	J	0.000054	J	0.000096	U	0.000093	U	0.000099	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0001	U	0.00011	U	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0001	U	0.00011	U	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0001	U	0.00011	U	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000088	U	0.0001	U	0.000027	J	0.000085	U	0.000083	U	0.000088	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000093	U	0.00011	U	0.0001	U	0.00009	U	0.000087	U	0.000093	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.000091	U	0.00018	J	0.0002	J	0.000087	U	0.000085	U	0.000091	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00014	U	0.00013	U	0.00011	U	0.00011	U	0.00012	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.000092	U	0.0021		0.0011		0.000089	U	0.000086	U	0.000092	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00014	U	0.00013	U	0.00011	U	0.00011	U	0.00012	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000096	U	0.00011	U	0.00011	U	0.000092	U	0.00009	U	0.000096	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00019	U	0.00018	U	0.00016	U	0.00015	U	0.00016	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00037	U	0.00043	U	0.00041	U	0.00036	U	0.00035	U	0.00037	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00037	U	0.00043	U	0.00041	U	0.00036	U	0.00035	U	0.00037	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00039	U	0.00044	U	0.00042	U	0.00037	U	0.00036	U	0.00039	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00005	U	0.000057	U	0.000055	U	0.000048	U	0.000047	U	0.00005	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0001	U	0.00011	U	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00005	U	0.000057	U	0.000055	U	0.000048	U	0.000047	U	0.00005	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00019	U	0.00018	U	0.00016	U	0.00015	U	0.00016	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00019	U	0.00018	U	0.00016	U	0.00015	U	0.00016	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0012	U	0.0014	U	0.0014	U	0.0012	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0019	U	0.0018	U	0.0016	U	0.0015	U	0.0016	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG										
			Location	SB18033		SB18041							
			Sample Date	10/17/2023		10/17/2023							
			Sample ID	LORNG_SB18033_00-01_10172023		LORNG_SB18033_07-09_10172023		LORNG_SB18041_00-01_10172023		LORNG_SB18041_06-08_10172023		LORNG_SB18041_06-08_10172023FD		LORNG_SB18041_11-13_10172023	
			QC Code	N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0002	U	0.00023	U	0.00022	U	0.00019	U	0.00019	U	0.0002	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00037	U	0.00043	U	0.00041	U	0.00036	U	0.00035	U	0.00037	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0001	U	0.00011	U	0.00011	U	0.000096	U	0.000093	U	0.000099	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.00023	U	0.00022	U	0.00019	U	0.00019	U	0.0002	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0025	U	0.0029	U	0.0027	U	0.0024	U	0.0023	U	0.0025	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00037	U	0.00043	U	0.00041	U	0.00036	U	0.00035	U	0.00037	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00037	U	0.00043	U	0.00041	U	0.00036	U	0.00035	U	0.00037	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00029	U	0.00033	U	0.00031	U	0.00028	U	0.00027	U	0.00029	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00081	U	0.00093	U	0.00089	U	0.00078	U	0.00076	U	0.00081	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0041	U	0.0047	U	0.0045	U	0.004	U	0.0038	U	0.0041	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0041	U	0.0047	U	0.0045	U	0.004	U	0.0038	U	0.0041	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG	C3W7688									
			Location	SB18042		SB18043		SB18044		SB18045			
			Sample Date	10/17/2023		10/17/2023		10/17/2023		10/17/2023			
			Sample ID	LORNG_SB18042_00-01_10172023		LORNG_SB18042_07-09_10172023		LORNG_SB18043_00-01_10172023		LORNG_SB18044_00-01_10172023		LORNG_SB18045_00-01_10172023	LORNG_SB18045_07-09_10172023
			QC Code	N		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00018	U	0.00018	U	0.00041	J	0.00064	J	0.00018	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.000088	U	0.000089	U	0.00053	J	0.00062	J	0.00009	U	0.000093	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000088	U	0.000089	U	0.00029	J	0.00063		0.00009	U	0.000093	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000088	U	0.000089	U	0.00039	J	0.00047	J	0.00009	U	0.000093	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.000088	U	0.000089	U	0.00056		0.0011		0.00009	U	0.000093	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00011	U	0.00011	U	0.00036	J	0.00069		0.00011	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000088	U	0.000089	U	0.00021	J	0.00032	J	0.00009	U	0.000093	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000088	U	0.000089	U	0.0002	J	0.00046	J	0.00009	U	0.000093	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000088	U	0.000089	U	0.00016	U	0.00017	J	0.00009	U	0.000093	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000088	U	0.000089	U	0.00016	U	0.00013	J	0.00009	U	0.000093	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000088	U	0.000089	U	0.00016	U	0.000075	J	0.00009	U	0.000093	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000078	U	0.000079	U	0.00014	U	0.00019	U	0.00008	U	0.000082	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000083	U	0.000083	U	0.00015	U	0.0002	U	0.000084	U	0.000087	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00008	U	0.000081	U	0.0005		0.0017		0.000082	U	0.000085	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0001	U	0.00011	U	0.00019	U	0.00013	J	0.00011	U	0.00011	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.000082	U	0.000082	U	0.026		0.074		0.00018	J	0.0012	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00011	U	0.00011	U	0.0001	J	0.00028	J	0.00011	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000085	U	0.000085	U	0.000078	J	0.00017	J	0.000086	U	0.000089	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00014	U	0.00014	U	0.00026	U	0.00035	U	0.00015	U	0.00015	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00033	U	0.00033	U	0.0006	U	0.00081	U	0.00034	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00033	U	0.00033	U	0.0006	U	0.00081	U	0.00034	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00034	U	0.00034	U	0.00062	U	0.00084	U	0.00035	U	0.00036	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000044	U	0.000044	U	0.000051	J	0.00021	J	0.00005	J	0.000046	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.000088	U	0.000089	U	0.00016	U	0.00022	U	0.00009	U	0.000093	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000044	U	0.000044	U	0.00008	U	0.00011	U	0.000045	U	0.000046	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00014	U	0.00014	U	0.00026	U	0.00035	U	0.00015	U	0.00015	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00014	U	0.00014	U	0.00026	U	0.00035	U	0.00015	U	0.00015	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0011	U	0.0011	U	0.002	U	0.0027	U	0.0011	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0014	U	0.0014	U	0.0026	U	0.0035	U	0.0015	U	0.0015	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG	C3W7688									
			Location	SB18042		SB18043		SB18044		SB18045			
			Sample Date	10/17/2023		10/17/2023		10/17/2023		10/17/2023			
			Sample ID	LORNG_SB18042_00-01_10172023		LORNG_SB18042_07-09_10172023		LORNG_SB18043_00-01_10172023		LORNG_SB18044_00-01_10172023		LORNG_SB18045_00-01_10172023	LORNG_SB18045_07-09_10172023
			QC Code	N		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00018	U	0.00018	U	0.00032	U	0.00043	U	0.00018	U	0.00019	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00033	U	0.00033	U	0.0006	U	0.00081	U	0.00034	U	0.00035	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.000088	U	0.000089	U	0.00016	U	0.00022	U	0.00009	U	0.000093	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00018	U	0.00018	U	0.00032	U	0.00043	U	0.00018	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0022	U	0.0022	U	0.004	U	0.0054	U	0.0022	U	0.0023	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00033	U	0.00033	U	0.0006	U	0.00081	U	0.00034	U	0.00035	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00033	U	0.00033	U	0.0006	U	0.00081	U	0.00034	U	0.00035	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00025	U	0.00025	U	0.00046	U	0.00062	U	0.00026	U	0.00027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00072	U	0.00072	U	0.0013	U	0.0018	U	0.00073	U	0.00075	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0036	U	0.0037	U	0.0066	U	0.0089	U	0.0037	U	0.0038	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0036	U	0.0037	U	0.0066	U	0.0089	U	0.0037	U	0.0038	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG		
			Location		
			Sample Date		
			Sample ID	LORNG_SB18045_13-15_10172023	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00021	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00011	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00011	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00011	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00011	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00013	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00011	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00011	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00011	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00011	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00011	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000094	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000099	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.000097	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00013	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0014	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00013	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0001	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00017	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0004	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0004	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00041	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000053	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00011	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000053	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00017	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00017	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0017	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG		
			Location		
			Sample Date		
			Sample ID	LORNG_SB18045_13-15_10172023	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00021	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0004	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00011	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00021	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0026	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0004	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0004	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0003	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00086	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0044	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0044	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG	C3W7688													
			Location	SB18046				SB18047		SB18048				SB1			
			Sample Date	10/17/2023				10/17/2023		10/17/2023				10/16			
			Sample ID	LORNG_SB18046_00-01_10172023		LORNG_SB18046_02-04_10172023		LORNG_SB18047_00-01_10172023		LORNG_SB18048_00-01_10172023		LORNG_SB18048_00-01_10172023FD		LORNG_SB18049_00-01_10162023			
			QC Code	N		N		N		N		FD		N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00026	U	0.00018	U	0.00019	J	0.0002	J	0.00013	J	0.00019	U		
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.000063	J	0.00009	U	0.00011	J	0.00014	J	0.00008	J	0.000097	U		
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00004	J	0.00009	U	0.000092	J	0.00023	J	0.00013	J	0.000045	J		
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000044	J	0.00009	U	0.00011	J	0.00018	J	0.0001	J	0.000097	U		
		Perfluorooctanoic acid (PFOA)	MG/KG	0.000068	J	0.00009	U	0.00031	J	0.00046	J	0.00021	J	0.000057	J		
		Perfluorononanoic acid (PFNA)	MG/KG	0.00016	U	0.00011	U	0.00026	J	0.0003	J	0.00014	J	0.00012	U		
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00013	U	0.00009	U	0.000066	J	0.000088	J	0.000052	J	0.000097	U		
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000059	J	0.00009	U	0.000089	J	0.000091	J	0.000052	J	0.000097	U		
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00013	U	0.00009	U	0.00014	U	0.00011	U	0.00012	U	0.000097	U		
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00013	U	0.00009	U	0.00014	U	0.00011	U	0.00012	U	0.000097	U		
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00013	U	0.00009	U	0.00014	U	0.00011	U	0.00012	U	0.000097	U		
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00012	U	0.00008	U	0.00012	U	0.0001	U	0.00011	U	0.000086	U		
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00012	U	0.000084	U	0.00013	U	0.00011	U	0.00011	U	0.000091	U		
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00012	U	0.000088	J	0.00033		0.00042	J	0.0003	J	0.00044			
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00015	U	0.00011	U	0.00017	U	0.00014	U	0.00014	U	0.00011	U		
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00089		0.00044		0.0037		0.0033	J	0.0021	J	0.0011			
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00016	U	0.00011	U	0.00017	U	0.00014	U	0.00014	U	0.00012	U		
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00013	U	0.000087	U	0.00014	U	0.00011	U	0.00012	U	0.000093	U		
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00021	U	0.00015	U	0.00023	U	0.00019	U	0.00019	U	0.00016	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00049	U	0.00034	U	0.00053	U	0.00043	U	0.00045	U	0.00036	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00049	U	0.00034	U	0.00053	U	0.00043	U	0.00045	U	0.00036	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0005	U	0.00035	U	0.00055	U	0.00044	U	0.00046	U	0.00037	U		
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000065	U	0.000045	U	0.00007	U	0.000057	U	0.00006	U	0.000058	J		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00013	U	0.00009	U	0.00014	U	0.00011	U	0.00012	U	0.000097	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000065	U	0.000045	U	0.00007	U	0.000057	U	0.00006	U	0.000048	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00021	U	0.00015	U	0.00023	U	0.00019	U	0.00019	U	0.00016	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00021	U	0.00015	U	0.00023	U	0.00019	U	0.00019	U	0.00016	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0016	U	0.0011	U	0.0018	U	0.0014	U	0.0015	U	0.0012	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0021	U	0.0015	U	0.0023	U	0.0019	U	0.0019	U	0.0016	U		

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG	C3W7688													
			Location	SB18046				SB18047		SB18048				SB1			
			Sample Date	10/17/2023				10/17/2023		10/17/2023				10/16			
			Sample ID	LORNG_SB18046_00-01_10172023		LORNG_SB18046_02-04_10172023		LORNG_SB18047_00-01_10172023		LORNG_SB18048_00-01_10172023		LORNG_SB18048_00-01_10172023FD		LORNG_SB18049_00-01_10162023			
			QC Code	N		N		N		N		FD		N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00026	U	0.00018	U	0.00028	U	0.00023	U	0.00024	U	0.00019	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00049	U	0.00034	U	0.00053	U	0.00043	U	0.00045	U	0.00036	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00013	U	0.00009	U	0.00014	U	0.00011	U	0.00012	U	0.000097	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00026	U	0.00018	U	0.00028	U	0.00023	U	0.00024	U	0.00019	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0033	U	0.0022	U	0.0035	U	0.0029	U	0.003	U	0.0024	U		
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00049	U	0.00034	U	0.00053	U	0.00043	U	0.00045	U	0.00036	U		
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00049	U	0.00034	U	0.00053	U	0.00043	U	0.00045	U	0.00036	U		
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00037	U	0.00026	U	0.0004	U	0.00033	U	0.00034	U	0.00028	U		
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0011	U	0.00073	U	0.0011	U	0.00093	U	0.00097	U	0.00078	U		
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0054	U	0.0037	U	0.0058	U	0.0047	U	0.0049	U	0.004	U		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0054	U	0.0037	U	0.0058	U	0.0047	U	0.0049	U	0.004	U		

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG							
			Location	3049		SB18052		SB18053		
			Sample Date	/2023		10/17/2023		10/17/2023		
			Sample ID	LORNG_SB18049_02-04_10162023		LORNG_SB18052_00-01_10172023	LORNG_SB18052_01-02_10172023	LORNG_SB18053_00-01_10172023	LORNG_SB18053_04-06_10172023	
			QC Code	N		N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00019	U	0.00019 U	0.0002 U	0.00019 U	0.0002	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.000096	U	0.000041 J	0.000075 J	0.000097 U	0.0001	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000096	U	0.000096 U	0.000051 J	0.000097 U	0.0001	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00012	U	0.00012 U	0.00012 U	0.00012 U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000085	U	0.000031 J	0.000087 U	0.000086 U	0.000088	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00009	U	0.00009 U	0.000092 U	0.000091 U	0.000093	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00023		0.000088 U	0.000089 U	0.000088 U	0.000091	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00011	U	0.00011 U	0.00012 U	0.00011 U	0.00012	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00025		0.00031	0.00029	0.00018 J	0.00035	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00011	U	0.00012 U	0.00012 U	0.00012 U	0.00012	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000092	U	0.000093 U	0.000094 U	0.000093 U	0.000096	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00016 U	0.00016 U	0.00016 U	0.00016	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00036	U	0.00036 U	0.00037 U	0.00036 U	0.00037	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00036	U	0.00036 U	0.00037 U	0.00036 U	0.00037	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00037	U	0.00037 U	0.00038 U	0.00037 U	0.00039	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000048	U	0.000048 U	0.000028 J	0.000048 U	0.00005	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000048	U	0.000048 U	0.000049 U	0.000048 U	0.00005	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00016 U	0.00016 U	0.00016 U	0.00016	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00016 U	0.00016 U	0.00016 U	0.00016	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0012	U	0.0012 U	0.0012 U	0.0012 U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0016 U	0.0016 U	0.0016 U	0.0016	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

			SDG							
			Location	3049		SB18052		SB18053		
			Sample Date	/2023		10/17/2023		10/17/2023		
			Sample ID	LORNG_SB18049_02-04_10162023		LORNG_SB18052_00-01_10172023	LORNG_SB18052_01-02_10172023	LORNG_SB18053_00-01_10172023	LORNG_SB18053_04-06_10172023	
			QC Code	N		N	N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00019	U	0.00019 U	0.0002 U	0.00019 U	0.0002	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00036	U	0.00036 U	0.00037 U	0.00036 U	0.00037	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.000096	U	0.000096 U	0.000098 U	0.000097 U	0.0001	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00019	U	0.00019 U	0.0002 U	0.00019 U	0.0002	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0024	U	0.0024 U	0.0024 U	0.0024 U	0.0025	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00036	U	0.00036 U	0.00037 U	0.00036 U	0.00037	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00036	U	0.00036 U	0.00037 U	0.00036 U	0.00037	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00028	U	0.00028 U	0.00028 U	0.00028 U	0.00029	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00078	U	0.00078 U	0.00079 U	0.00079 U	0.00081	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0039	U	0.004 U	0.004 U	0.004 U	0.0041	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0039	U	0.004 U	0.004 U	0.004 U	0.0041	U

Prepared by: AKN
Date: 2/27/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

			SDG	C3W5473					
			Location	FIELDQC					
			Sample Date	10/16/2023				10/17/2023	
			Sample ID	LORNG_EB100_10162023		LORNG_EB101_10162023		LORNG_EB102_10172023	
			QC Code	EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.8	U	1.8	U	1.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.23	U	0.23	U	0.23	U
		Perfluorononanoic acid (PFNA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.91	U	0.91	U	0.91	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.91	U	0.91	U	0.91	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.91	U	0.91	U	0.91	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.45	U	0.45	U	0.45	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.4	U	0.4	U	0.4	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.43	U	0.43	U	0.43	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.43	U	0.43	U	0.43	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.43	U	0.43	U	0.43	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.43	U	0.43	U	0.43	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.85	U	0.85	U	0.85	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.43	U	0.43	U	0.43	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.91	U	0.91	U	0.91	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.7	U	1.7	U	1.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.7	U	1.7	U	1.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.5	U	3.5	U	3.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.23	U	0.23	U	0.23	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.91	U	0.91	U	0.91	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.91	U	0.91	U	0.91	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.91	U	0.91	U	0.91	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.91	U	0.91	U	0.91	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3	U	2.3	U	2.3	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.5	U	4.5	U	4.5	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/19/24

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W5473

		SDG		C3W5473				
		Location		FIELDQC				
		Sample Date		10/16/2023		10/16/2023		10/17/2023
		Sample ID		LORNG_EB100_10162023		LORNG_EB101_10162023		LORNG_EB102_10172023
		QC Code		EB		EB		EB
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6	U	3.6	U	3.6	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.5	U	3.5	U	3.5	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.45	U	0.45	U	0.45	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	55	U	55	U	55	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6	U	6	U	6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6	U	6	U	6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.8	U	2.8	U	2.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8	U	8	U	8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	28	U	28	U	28	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	28	U	28	U	28	U

Prepared by: AKN
Date: 2/12/24
Checked by: RT
Date: 3/19/24

Table 3

Summary of Data Validation Actions

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3W7688

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3W7688	E1633DR	T	XIW553	LORNG_SB18048_00-01_10172023	Perfluorooctanoic acid (PFOA)	0.00046		0.00046	J	FDD	MG/KG
					Perfluorononanoic acid (PFNA)	0.0003		0.0003	J	FDD	MG/KG
					Perfluorohexanesulfonic acid (PFHxS)	0.00042		0.00042	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0033		0.0033	J	FDD	MG/KG
			XIW554	LORNG_SB18048_00-01_10172023FD	Perfluorooctanoic acid (PFOA)	0.00021	J	0.00021	J	FDD	MG/KG
					Perfluorononanoic acid (PFNA)	0.00014	J	0.00014	J	FDD	MG/KG
					Perfluorohexanesulfonic acid (PFHxS)	0.0003		0.0003	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0021		0.0021	J	FDD	MG/KG

Prepared by:AKN
Date:2/27/24
Checked by: RT
Date: 3/19/24

Table 4

Field Duplicate RPD Summary

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W7688
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3W7688	LORNG_SB18041_06-08_10172023	LORNG_SB18041_06-08_10172023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000085	U	0.000083	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00009	U	0.000087	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.000087	U	0.000085	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.000089	U	0.000086	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000092	U	0.00009	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00016	U	0.00015	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00036	U	0.00035	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00036	U	0.00035	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00037	U	0.00036	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000048	U	0.000047	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.000096	U	0.000093	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000048	U	0.000047	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00016	U	0.00015	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00016	U	0.00015	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0012	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0016	U	0.0015	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00019	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00036	U	0.00035	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.000096	U	0.000093	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0024	U	0.0023	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00036	U	0.00035	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00036	U	0.00035	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00028	U	0.00027	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00078	U	0.00076	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.004	U	0.0038	U	NC	

Prepared by: AKN 2/2/24
Checked by: RT 3/19/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W7688
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.004	U	0.0038	U	NC	
			WetChem	TOTAL SOLIDS (PERCENT)	87		86		1	
				MOISTURE, PERCENT (PERCENT)	13		14		7	
C3W7688	LORNG_SB18048_00-01_10172023	LORNG_SB18048_00-01_10172023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0002	J	0.00013	J	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00014	J	0.00008	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00023	J	0.00013	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00018	J	0.0001	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00046		0.00021	J	75	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0003		0.00014	J	73	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000088	J	0.000052	J	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000091	J	0.000052	J	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0001	U	0.00011	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00042		0.0003		33	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00014	U	0.00014	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0033		0.0021		44	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00014	U	0.00014	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00019	U	0.00019	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00043	U	0.00045	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00043	U	0.00045	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00044	U	0.00046	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000057	U	0.00006	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00011	U	0.00012	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000057	U	0.00006	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00019	U	0.00019	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00019	U	0.00019	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0014	U	0.0015	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0019	U	0.0019	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00023	U	0.00024	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00043	U	0.00045	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00023	U	0.00024	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0029	U	0.003	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00043	U	0.00045	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00043	U	0.00045	U	NC	

Prepared by: AKN 2/2/24
Checked by: RT 3/19/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3W7688
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00033	U	0.00034	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00093	U	0.00097	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0047	U	0.0049	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0047	U	0.0049	U	NC	
			WetChem	TOTAL SOLIDS (PERCENT)	76		69		10	
				MOISTURE, PERCENT (PERCENT)	24		31		25	

Prepared by: AKN 2/2/24
Checked by: RT 3/19/24

Attachment B

Completed DV Checklist with Notes

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 2B
PFAS – DoD QSM 5.4 Table B-24

Project Task: Loring AFB
Method: 1633 **Lab and SDG: Bureau Veritas C3W7688**
Date: 2/23/24 **Reviewer: R. Thielke**

☐ **USEPA Stage 2B**

NOTE: *Per QSM 5.4 Table B-24: In addition to the requirements specified in Table B-24, ALL OF THE REQUIREMENTS CONTAINED IN EPA DRAFT METHOD 1633 (CURRENT VERSION) MUST BE MET.*

1. **X Case Narrative and Data Package Completeness**
   - COC review
   - Requested compound list reported
   - Detection Limits meet QAPP and PALs and correct analysis level was reported (low/standard level)
   - Results between MDL and LOQ qualified estimated (J), NDs reported to LOD
   - Confirm transition ions in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard Used for Quantification*" table in current draft Method 1633) were used for all analytes

2. **X Holding Time and Sample Preservation/Collection**
   - Sample conditions upon receipt at laboratory
   - Holding times met (See Section 8.5 Holding Times in Method 1633 for more information and exceptions re NFDHA):
   - ----Aqueous samples 28 days to extraction if stored by lab at 0-6 degrees C and protected from light/90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Soil/Solid samples 90 days to extraction if stored by lab at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Tissue samples 90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - ----Biosolids samples 90 days to extraction if stored at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
   - Collection, preparation, and analysis date verification

3. **X QC Blanks**
   - Completeness and evaluation
   - Method blanks (preparation) ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
   - Instrument blanks ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
   - Field QC blanks –See discussion in Module 6 Section 3.3.1
   - For all blank qualification actions follow Module 6 Table III (below) and discussions in Module 6 Section 3.3.1 and 4.7, and use ≤2x blank concentration for qualifying result U if sample result is > LOD and ≤ LOQ—

Sample Result	Validated Result	Validation Qualifier
Non-detect or detect ≤LOD	Report at LOD	U
>LOQ but ≤5x blank	Report at sample result	J+
>LOQ and >5x blank	Report at sample result	None

4. X **Instrument Tuning and Instrument Sensitivity Check (ISC)**
   - Mass Calibration performed annually or as recommended by the instrument manufacturer, whichever is more frequent, per Method 1633 Section 10.1
   - Mass Calibration Verification ± 0.2 amu per Method 1633 (not specified in Table B-24)
   - Valid Mass Calibration Verification before ICAL and sample analysis
   - ISC concentrations at LOQ and recoveries ±30%
   - Valid ISC prior to sample analysis

5. X **Initial Calibration**
   - Sequence Log and Preparation Log Review
   - Quantitative/Qualitative Standard Review - Confirm analytes with branched isomers in the initial calibration standards are identified in the lab report and that areas of branched isomers area included in the calibration response areas for those analytes (See Method 1633 Sections 10.1.1 and 15.1.3).
   - Confirm lowest standard concentration is ≤ the LOQ.
   - %RSD RFs ≤ 20; linear $r^2 \geq 0.99$ (DoD QSM 5.4 B-24). If %RSD >30 use judgment to J or R.
   - Calibration standards recovered 70-130% of true value
   - ICV ±30%
   - Instrument Blank Review

6. X **Continuing Calibration**
   - Verify the CCV was analyzed every 10 samples in sequence.
   - %D ±30%
   - Use judgment to J or R for %D > 50
   - Instrument Blank Review

   CCV results were outside criteria. No action taken because no associated samples

7. X **Laboratory Control Samples** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)
   - Completeness and evaluation
   - Percent Recoveries within criteria
   - RPD ≤30 if LCSD reported
   - Ion ratios within limit for all analytes

8. X **Matrix Duplicate (Lab Duplicate) and Field Duplicate Precision**
   - Completeness and evaluation
   - Lab Duplicate RPD ≤ 30
   - Field Duplicate use QAPP Limits or determine project limits

   FD out for some analytes See Report

9. X **Matrix Spike Results** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)
   - Completeness and evaluation
   - Recovery within criteria and RPD ≤ 30

10. X **Ion Abundance Ratio (IAR)**
    - As defined in Method 1633 4th Draft Section 14.3.5: AreaQ1/AreaQ2 where Q1 and Q2 are primary and secondary transition masses for detected compounds. Acceptance criteria are based on comparison with ion ratios established by the ICAL midpoint standard or daily CCV. If secondary transition masses are identified in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard*

Used for Quantification" table in current draft Method 1633), IAR must be within ±50% of IAR established for the ICAL midpoint standard or daily CCV per Section 15.1.3. Check ion ratios reported for LCS and samples.

11. X Extracted Internal Standard (EIS)

- Lab Recovery Limits B-24 (%R 20-150 vs ICAL midpoint or CCV)
- J for %R <20 and >200 (Module 6)
- R ND results if <10 and use judgment for detections
- RTs for samples and batch QC 0.40 minutes of CCV or initial calibration (if no CCV run)
- Analytes RT within +/- 0.1 minutes of their associated EIS

12. X Non-Extracted Internal Standard (NIS) Recovery (%R >30 vs ICAL midpoint or CCV)

- DoD Module 6 criteria: J/UJ results if <30 or use professional judgment for R (Note: Method 1633 Section 14.9 specifies NIS recoveries within 50-200% vs CCV)
- RTs for samples 0.40 minutes of CCV or initial calibration (if no CCV run)

13. X Bile Salt Standard Retention Time (RT) Check

Did the laboratory analyze a bile salt standard? (required by Method 1633/QSM 5.4 B-24 for all sample matrices) **YES** (circle one) **YES**

Is the RT of the bile salt standard >1 minute from the RT window for PFOS (including linear and branched isomers)? YES NO (circle one)

NOTE: Three bile acids (TDCA, TCDCA, and TUDCA) have the same (<1 amu) primary transition masses as PFOS: m/z 498.9 ->79.9 for PFOS, and m/z 499.2 ->79.9 for the bile acids. As a result, the presence of these bile acids in samples can cause high bias to PFOS concentrations if co-eluting with PFOS. The bile salt standard must demonstrate chromatographic separation so there is no co-elution with any PFOS isomer.

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 4
PFAS – DoD QSM 5.4 Table B-24

STAGE 3/STAGE 4 REVIEW RECORD

Project Task: Loring AFB
Method: 1633 **Lab and SDG: Bureau Veritas C3W7688**
Date: 2/23/24 **Reviewer: R. Thielke**

This checklist is completed in conjunction with a Stage 2B checklist, Data Validation Guidelines Module 6, and criteria from DoD QSM 5.4 B-24.

☐ **X** Standard Preparation and Traceability Review
Obtain standard preparation documentation and original vendor certificates and confirm concentrations for initial calibration working standard, ICV, and LCS for 10% of target analytes. Determine if compounds had vendor standards for salt forms for any compounds. If standard with salts were used, confirm concentrations were adjusted for acid fraction concentration.

☐ **X** **I**nitial Calibration (including ICV and ISC)
Raw Data and Calculation 10% of target analytes – RF or RRF
Raw Data and Calculation 10% of target analytes – RSD and %D

☐ **X** Continuing Calibration
Raw Data and Calculation 10% of target analytes – RF or RRF
Raw Data and Calculation 10% of target analytes – %D

☐ **N/A** Method Blanks **(All Non Detected)**
Raw Data and Calculation for one detected target analyte
Review Ion Chromatograms
EIS Recovery for 10% EIS
NIS Response for 10% NIS
Detection Limits verified for one target analyte

☐ **X** Laboratory Control Sample (LCS) and Low Level LCS Results
Review Ion Chromatograms
Raw Data and Calculation for primary compound(s) of concern and 10% of target analytes
Summary Form Verification - % R and RPD

☐ **X** Matrix Spike Results (if applicable)
Review Ion Chromatograms
Raw Data and Calculation for primary compound(s) of concern and 10% of target analytes
Summary Form Verification - % R (and RPD if MS/MSD)

☐ **X** Matrix Duplicate / Associated Field Sample
Review Ion Chromatograms
Raw Data and Calculation for primary compound of concern and 10% of target analytes Summary Form Verification – RPD using concentration (not %R)

☐ **X** Field Sample PFAS Identification

- Verify ion transitions (precursor/product ion pairs as specified in Method 1633 4th Draft Table 9)
- Ion ratios – use lab criteria, must not exceed 50-150%
- S/N Ratio for positive identification/detection of Target Analytes and EIS-- Quantitation ions and confirmation ions S/N ≥ 3; or if no confirmation ion is expected (Method 1633

4th Draft Table 9), quantitation ion must have S/N ≥10, as described in Method 1633 4th Draft Section 15.1.1: *For target analytes or EISs to be identified, peak responses of the quantitation and confirmation ions must be at least three times the background noise level (S/N 3:1). The quantitation ion must have a S/N ≥ 10:1 if there is no confirmation ion* [specified in Table 9]. *If the S/N ratio is not met due to high background noise, the laboratory must correct the issue (e.g., perform instrument troubleshooting and any necessary maintenance, such as cleaning the ion source, replacing the LC column, or if needed, repeat the cleanup steps to remove background due to the sample matrix). If the S/N ratio is not met but the background is low, then the analyte is to be considered a non-detect.* Note: If lab result is <LOQ and expected confirmation ion is not detected, qualify U at LOD or sample concentration, as appropriate. If lab result is >LOQ and expected confirmation ion is not detected, review raw data and use professional judgment.

- Quantitation ion and confirmation ion maximize simultaneously (±2 sec.)

☐ **X** Field Sample Results
Review Ion Chromatograms
Raw Data and Calculation for all detected analytes including concentration and ion ratios
Extracted Internal Standard for 10% of EIS
Non-extracted Internal Standard for 10% of NIS
Detection limits verified for one analyte per sample
RT ICAL midpoint or initial CCV, ± 0.4 min.

☐ **X** Detection Limits

Attachment D

Calculation Sheets (Stage 4 Data Only)

Stage 4 Calculation Checks

SDG: **C3W7688** Analytical Batch: **WS#9041407**

Initial Calibration Relative Response Factors - 11/14/2023 (Instrument LCMS 7 LC MS/MS)

$RF = \frac{Ac}{Ais} X \frac{Cis}{Cc}$ Analyte = **PFBA** Internal Std = **13C4-PFBA**

Ac = Standard Area
Ais = Internal Standard Concentration
Cis = Internal Standard Amount
Cc = Standard Concentration

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	RF reported
1		**7633**	**123773**	**100.000**	**2000.00**	0.00310	**0.000**
2		**35018**	**122006**	**100.000**	**8000.00**	0.00360	**0.000**
3		**88131**	**122553**	**100.000**	**20000.00**	0.00360	**0.000**
4		**170243**	**122541**	**100.000**	**40000.00**	0.00350	**0.000**
5		**305928**	**121976**	**100.000**	**72000.00**	0.00350	**0.000**
6		**430772**	**118137**	**100.000**	**100000.00**	0.00360	**0.000**
7		**685415**	**117208**	**100.000**	**160000.00**	0.00370	**0.000**
8							
9							
					AVG RF =	0.00351	**0.00000**

RSD = 5.553903 **5.67**

Analyte = **PFOA** Internal Std = **13C8-PFOA**

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	**RF reported**
1	**0.428**	**3319**	**53003**	**10.000**	**0.40**	1.56550	**1.5660**
2	**0.936**	**7577**	**55373**	**10.000**	**0.80**	1.71040	**1.7110**
3	**2.132**	**15435**	**49498**	**10.000**	**2.00**	1.55920	**1.5590**
4	**4.78**	**34875**	**49890**	**10.000**	**5.00**	1.39810	**1.3980**
5	**9.747**	**72123**	**50596**	**10.000**	**10.00**	1.42550	**1.4250**
6	**19.349**	**134369**	**47488**	**10.000**	**20.00**	1.41480	**1.4150**
7	**46.984**	**339888**	**49467**	**10.000**	**50.00**	1.37420	**1.3740**
8	**238.178**	**1591270**	**45685**	**10.000**	**250.00**	1.39330	**1.3930**
9	**902.9210**	**5174245**	**39186**	**10.000**	**1000.00**	1.32040	**1.3200**
					AVG RF =	1.46238	**1.4624**

RSD = 8.443965 **8.44772**

Analyte = **PFNA** Internal Std = **13C9-PFNA**

Level	Relative Response	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	**RF reported**
1	**0.387**	**2356**	**29608**	**5.000**	**0.40**	0.99470	**0.995**
2	**0.877**	**5542**	**30709**	**5.000**	**0.80**	1.12790	**1.128**
3	**2.144**	**11594**	**26277**	**5.000**	**2.00**	1.10310	**1.103**
4	**4.925**	**27413**	**27045**	**5.000**	**5.00**	1.01360	**1.014**
5	**9.629**	**54774**	**27641**	**5.000**	**10.00**	0.99080	**0.991**
6	**19.774**	**105645**	**25961**	**5.000**	**20.00**	1.01730	**1.017**
7	**51.301**	**268245**	**25407**	**5.000**	**50.00**	1.05580	**1.056**
8	**235.704**	**1225180**	**25257**	**5.000**	**250.00**	0.97020	**0.970**
9	**959.729**	**4133740**	**20929**	**5.000**	**1000.00**	0.98760	**0.988**
					AVG RF =	1.029000	**1.029010**

RSD = 5.341840 **5.3425**

Stage 4 Calculation Checks

SDG: **C3W7688** Analytical Batch: **WS#9041407**

Continuing Calibration Verification - 11/14/2023 6:47:47 PM (Instrument LCMS 7 LC MS/MS)

Compound	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	% Recovery Reported	% Recovery Calculated	RPD
PFBA				**2000.000**	**1706.9178**	**85.3**	85.34589	0.05
PFPeA				**1000.000**	**870.55**	**87.1**	87.1	0.05
PFHxA				**500.000**	**433.68**	**86.7**	86.7	0.04
PFHpA				**500.000**	**436.44**	**87.3**	87.3	0.01
PFOA				**500.000**	**452.93**	**90.6**	90.6	0.02

Level	Compound	Ac	Ais	Conc. Is	Conc. C	RF_{calc}	RF reported	RPD
CCV	**PFBA**	**7492**	**125279**	**100.000**	**2000.000**	0.00300	**N/A**	
CCV	**PFPeA**	**4686**	**68835**	**100.000**	**1000.000**	0.00680	**N/A**	
CCV	**PFHxA**	**2503**	**38001**	**100.000**	**500.000**	0.01320	**N/A**	
CCV	**PFHpA**	**2593**	**37781**	**100.000**	**500.000**	0.01370	**N/A**	
CCV	**PFOA**	**2167**	**32566**	**100.000**	**500.000**	0.01330	**N/A**	

Stage 4 Calculation Checks

SDG: **C3W7688** Analytical Batch: **WG76557**

Surrogate Recovery

Sample ID: **2105035-3 (L34869-2)**

Surrogate	Analyte	Spiked (ng)	Found (ng)	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference (%D)
13C4-PFBA	PFBA	100.0	85.6132	86.0	85.6	0.45
13C5-PFPeA	PFPeA	100.0	83.5325	84.0	83.5	0.56
13C5-PFHxA	PFHxA	100.0	83.7734	84.0	83.8	0.27
13C4-PFHpA	PFHpA	100.0	85.048	85.0	85.0	0.06
13C8-PFOA	PFOA	100.0	81.6931	82.0	81.7	0.37
13C9-PFNA	PFNA					
13C6-PFDA	PFDA					
13C7-PFUnA	PFUnA					
13C2-PFDoA	PFDoA					
13C2-PFTeDA	PFTeDA					
13C3-PFBS	PFBS					
13C3-PFHxS	PFHxS					
13C8-PFOS	PFOS					
13C2-4:2	4:2 FTS					
13C2-6:2	6:2 FTS					
13C2-8:2	8:2 FTS					
13C8-PFOSA	PFOSA					
D3-N-MeFOSA	N-MeFOSA					
D5-N-EtFOSA	N-EtFOSA					
D3-MeFOSAA	MeFOSAA					
D5-EtFOSAA	EtFOSAA					
d7-NMe-FOSE	4:2 FTS					
d9-NEt-FOSE	6:2 FTS					

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (2.504 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB018045-00-01_10172023 (XIW533)

Vf =	**0.0008**	L
Vi =	**2.504**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFBA / 13C4-PFBA	**2697**	**121080**	0.022	**3.50350E-05**	635.779342
PFPeA / 13C5-PFPeA	**4401**	**68426**	0.064	**7.81989E-05**	822.488002
PFHxA / 13C5-PFHxA	**2607**	**38087**	0.068	**1.51877E-04**	450.683526
PFHpA / 13C8-PFHpA	**3722**	**39037**	0.095	**1.57250E-04**	606.330312

3W7688

ed internal standard analyte)

QC Batch
9041407

ng/g **Calculated Concentration**	mg/kg **Calculated Concentration**	mg/kg **Reported Concentration**	**RPD**
0.40625	0.00041	**0.00041**	0.16
0.52555	0.00053	**0.00053**	0.16
0.28798	0.00029	**0.00029**	0.15
0.38743	0.00039	**0.00039**	0.15

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (4.456 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB18045_00-01_10172023 (XIW534)

Vf =	**0.0008**	L
Vi =	**4.456**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFOS / 13C8-PFOS	**488**	**5173**	0.094	**1.89190E-04**	498.630875
PFOSA / 13C8-PFOSA	**116**	**5945**	0.020	**1.41422E-04**	137.971427
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

3W7688

ed internal standard analyte)

QC Batch
9041407

ng/g	mg/kg	mg/kg	
Calculated Concentration	**Calculated Concentration**	**Reported Concentration**	**RPD**
0.17904	0.00018	**0.00018**	0.31
0.04954	0.00005	**0.00005**	0.92
#DIV/0!	#DIV/0!		#DIV/0!
#DIV/0!	#DIV/0!		#DIV/0!

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (4.307 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB18045_07-09_10172023 (XIW535)

Vf =	**0.0008**	L
Vi =	**4.307**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFOS / 13C8-PFOS	**3342**	**5264**	0.635	**1.89190E-04**	3355.77155
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

3W7688

ed internal standard analyte)

QC Batch
9041407

ng/g	mg/kg	mg/kg	
Calculated Concentration	**Calculated Concentration**	**Reported Concentration**	**RPD**
1.24663	0.00125	**0.00124**	0.53
#DIV/0!	#DIV/0!		#DIV/0!
#DIV/0!	#DIV/0!		#DIV/0!
#DIV/0!	#DIV/0!		#DIV/0!

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (3.782 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB18045_13-15_10172023 (XIW536)

Vf =	**0.0008**	L
Vi =	**3.782**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFOS / 13C8-PFOS	**3293**	**5324**	0.619	**1.89190E-04**	3269.30551
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

3W7688

ed internal standard analyte)

QC Batch
9041407

ng/g	mg/kg	mg/kg	
Calculated Concentration	**Calculated Concentration**	**Reported Concentration**	**RPD**
1.38310	0.00138	**0.00140**	1.21
#DIV/0!	#DIV/0!		#DIV/0!
#DIV/0!	#DIV/0!		#DIV/0!
#DIV/0!	#DIV/0!		#DIV/0!

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (1.845 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB018045-00-01_10172023 (XIW533)

Vf =	**0.0008**	L
Vi =	**1.845**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFOS / 13C8-PFOS	**4750**	**294**	16.156	**1.89076E-04**	85449.7943
PFPeA / 13C5-PFPeA	**2490**	**44161**	0.056	**7.82375E-05**	720.685093
PFHxA / 13C5-PFHxA	**2661**	**24520**	0.109	**1.49809E-04**	724.412964
PFHpA / 13C8-PFHpA	**2104**	**24586**	0.086	**1.56394E-04**	547.18812

3W7688

ed internal standard analyte)

QC Batch
9042122

ng/g **Calculated Concentration**	mg/kg **Calculated Concentration**	mg/kg **Reported Concentration**	**RPD**
74.10280	0.07410	**0.07400**	0.14
0.62498	0.00062	**0.00062**	0.80
0.62822	0.00063	**0.00063**	0.28
0.47453	0.00047	**0.00047**	0.96

Sample Concentration Recalculation - Job # C3

Blue Fields are Input Fields

Calculation for Final Instrument Concentration of XIW533 Extract

Calibration I y = m*x

Where

y = Area Ratio (Response of native analyte / Response of extracte

x = Final instrument concentration (ng/L)

m = From calibration equation (analyte specific)

Calculation for Concentration in Sample

Sample Concentration (ng/g) = Cs x Vf / Vi x AF

Where: Cs = Final instrument concentration (ng/L)

Vf = Final sample volume (0.0008 L)

Vi = Initial sample weight (3.491 g)

AF = Aliquot Factor = 2

Sample ID / Lab ID

LORNG_SB018045-00-01_10172023 (XIW533)

Vf =	**0.0008**	L
Vi =	**3.491**	g
AF =	**2**	

Analyte / ISTD	Area of Target	Area of ISTD	Area Ratio	(from cal curve) m	Cs
PFOS / 13C8-PFOS	**7495**	**5453**	1.374	**1.89076E-04**	7269.43875
PFPeA / 13C5-PFPeA	**1401**	**60689**	0.023	**7.81989E-05**	295.207584
PFHxA / 13C5-PFHxA	**2601**	**34602**	0.075	**1.51877E-04**	494.933179
PFHpA / 13C8-PFHpA	**2151**	**34110**	0.063	**1.57250E-04**	401.021851

3W7688

ed internal standard analyte)

QC Batch
9042122

ng/g **Calculated Concentration**	mg/kg **Calculated Concentration**	mg/kg **Reported Concentration**	**RPD**
3.33174	0.00333	**0.00330**	0.96
0.13530	0.00014	**0.00014**	3.41
0.22684	0.00023	**0.00023**	1.38
0.18380	0.00018	**0.00018**	2.09

Level 4 Calculation Checks

LCS Recalculation - Job # C3W7688

9041407:SPIKE	QC Batch	9041407			m value from Curve		
Analyte	**IS**	**Area**	**calculated conc**	**SPIKE AMT**	**Ave. from IC**	**Calculated %R**	**Reported %R**
PFOA	13C8-PFOA	87517	19119.35237	18000	0.0001469	106.22%	106.2
PFNA	13C9-PFNA	74580	18866.20302	18000	0.00032236	104.81%	104.8
PFBS	13C3-PFBS	28884	17086.3793	15966	0.00017372	107.02%	107
PFHxS	13C3-PFHxS	20272	17467.84975	16452	0.00016648	106.17%	106.2
PFOS	13C8-PFOS	17873	17674.11985	16704	0.000189196	105.81%	105.8
PFBA	13C4-PFBA	320265	76799.46974	72000	**0.00003504**	106.67%	105.2

IS	Area
13C8-PFOA	31160
13C9-PFNA	12263
13C3-PFBS	9731
13C3-PFHxS	6971
13C8-PFOS	5345
13C4-PFBA	119028

DF
1
1
1
1
1
1

Level 4 Calculation Checks

MS/MSD Recalculation - Job # C3W7688

XIW534-MS **QC Batch** **9041407**

Analyte	IS	Area	Ave. from IC	X (on column)	Spike Amount (ug/L)	Adjusted Spike (ng/g)	Final Result (ng/g)	Native Result (ng/g)	%R Calculated
PFOA	13C8-PFOA	73232	0.0001469	18768.72095	18000	7.331228999	7.644321741	0	104.27%
PFNA	13C9-PFNA	63089	0.00032236	18402.42271	18000	7.331228999	7.495131944	0	102.24%
PFBS	13C3-PFBS	24523	0.00017372	17896.03727	15966	6.502800122	7.288885966	0	112.09%
PFHxS	13C3-PFHxS	16632	0.00016648	16391.12262	16452	6.700743305	6.675948526	0	99.63%
PFOS	13C8-PFOS	15400	0.000189196	18291.47634	16704	6.803380511	7.449944543	0.1796	106.86%

IS	Area	%R Reported
13C8-PFOA	26561	104.30%
13C9-PFNA	10635	102.20%
13C3-PFBS	7888	112.10%
13C3-PFHxS	6095	102.20%
13C8-PFOS	4450	109.50%

Sample Vol: 3.9284
Inj Vol: 1
Ext Vol: 0.0008
AF: 2

XIK625-MSD

Analyte	IS	Area	Ave. from IC	X (on column)	Spike Amount (ug/L)	Adjusted Spike (ng/g)	Final Result (ng/g)	Native Result (ng/g)	%R Calculated	RPD Calculated
PFOA	13C8-PFOA	110643	0.000307255	23144.23006	18000	7.331228999	9.426425033	2.2432	97.98%	-6.22%
PFNA	13C9-PFNA	99196	0.000707663	22960.54793	18000	7.331228999	9.351613047	2.505	93.39%	-9.04%
PFBS	13C3-PFBS	28652	0.000376569	16181.8516	15966	6.502800122	6.590714427	0.0474	100.62%	-10.78%
PFHxS	13C3-PFHxS	22506	0.00034925	19014.74824	16452	6.700743305	7.744526317	1.3061	96.09%	-3.62%
PFOS	13C8-PFOS	142120	0.000416742	138403.6477	16704	6.803380511	56.37049087	47.9	124.50%	15.25%

IS	Area	%R Reported	RPD Reported
13C8-PFOA	15559	99	1.2%
13C9-PFNA	6105	94	6.6%
13C3-PFBS	4702	101	1.2%
13C3-PFHxS	3389	97	4.5%
13C8-PFOS	2464	NC	0.0%

Sample Vol: 3.8801
Inj Vol: 1
Ext Vol: 0.0008
AF: 2

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.validatausa.com

DATA VALIDATION SUMMARY REPORT - PFAS

COMPANY:	WSP USA Environment and Infrastructure
PROJECT NAME:	Loring AFB
SITE NAME:	Loring AFB RI-TO 1048
CONTRACTED LAB:	Bureau Veritas Laboratories, Mississauga, Ontario, Canada
PROJECT NUMBER:	775361701
QA/QC LEVEL:	EPA Stage 2B Validation Manual (S4VM)
ANALYTICAL METHOD:	EPA Draft Method 1633
VALIDATION GUIDELINES:	Quality Assurance Project Plan (QAPP) TO 1048 Quality Program Plan September 2023, USEPA Staged Validation Checklist – Stage 2B, Data Validation Guidelines Module 6, November 2022, Professional judgment
SAMPLE MATRIX:	Soil
TYPES OF ANALYSES:	Per fluorinated Alkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectroscopy (LC-MS/MS)
DATA VALIDATION DATE:	March 8, 2024
DATA REVIEWER(S):	Robert Thielke
SECONDARY REVIEWER(S):	Timothy Morris, Kevin Harmon
SDG NUMBER:	C3X5479
SAMPLING DATE(S):	October 20, 2023
SAMPLES:	See Table 1

Forty PFAS analytes to be Validated

Analyte	Acronym	Extracted Internal Standard
Perfluorobutanoic acid	PFBA	13C4-PFBA
Perfluoropentanoic acid	PFPeA	13C5-PFPeA
Perfluorohexanoic acid	PFHxA	13C5-PFHxA
Perfluoroheptanoic acid	PFHpA	13C4-PFHpA
Perfluorooctanoic acid	PFOA	13C8-PFOA
Perfluorononanoic acid	PFNA	13C9-PFNA
Perfluorodecanoic acid	PFDA	13C6-PFDA
Perfluoroundecanoic acid	PFUnA	13C7-PFUnA
Perfluorododecanoic acid	PFDoA	13C2-PFDoA
Perfluorotridecanoic acid	PFTrDA	13C2-PFTeDA
Perfluorotetradecanoic acid	PFTeDA	13C2-PFTeDA
Perfluorobutanesulfonic acid	PFBS	13C3-PFBS
Perfluoropentanesulfonic acid	PFPeS	13C3-PFHxS
Perfluorohexanesulfonic acid	PFHxS	13C3-PFHxS
Perfluoroheptanesulfonic acid	PFHpS	13C8-PFOS
Perfluorooctanesulfonic acid	PFOS	13C8-PFOS
Perfluorononanesulfonic acid	PFNS	13C8-PFOS
Perfluorodecanesulfonic acid	PFDS	13C8-PFOS
Perfluorododecanesulfonic acid	PFDoS	13C8-PFOS
1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2 FTS	13C2-4:2FTS
1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2 FTS	13C2-6:2FTS
1H,1H,2H,2H-Perfluorodecane sulfonic	8:2 FTS	13C2-8:2FTS
Perfluorooctanesulfonamide	PFOSA	13C8-PFOSA
N-ethyl perfluorooctanesulfonamide	EtFOSA	D5-EtFOSA
N-methyl perfluorooctanesulfonamide	MeFOSA	D3-MeFOSA
N-ethyl perfluorooctanesulfonamidoacetic acid	EtFOSAA	D5-EtFOSAA
N-methyl perfluorooctanesulfonamidoacetic acid	MeFOSAA	D3-MeFOSAA
N-ethyl perfluorooctanesulfonamidoethanol	EtFOSE	D9-EtFOSE
N-methyl perfluorooctanesulfonamidoethanol	MeFOSE	D7-MeFOSE
Hexafluoropropylene oxide dimer acid	HFPO-DA	13C3HFPO-DA
4,8-Dioxa-3-H-perfluorononanoic acid	ADONA	13C3HFPO-DA
Perfluoro-3-methoxypropanoic acid	PFMPA	13C5-PFPeA
Perfluoro-4-methoxybutanoic acid	PFMBA	13C5-PFPeA
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	13C5-PFHxA
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	13C3HFPO-DA
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	13C3HFPO-DA
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	13C5-PFHxA
3-Perfluoropropyl propanoic acid	3:3FTCA	13C5-PFPeA
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	13C5-PFHxA
3-Perfluoroheptyl propanoic acid	7:3FTCA	13C5-PFHxA

QAPP Validation Qualifiers

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Bureau Veritas Laboratories – SDG: C3X5479

PFAS (Per- and polyfluoroalkyl substances)

SUMMARY

I.) General:

The samples were extracted and analyzed by LC/MS/MS for a selected list of PFAS using EPA Draft Method 1633. The results for PFHxS, PFOA, PFOS, PFNA, PFOSA, MeFOSA, EtFOSA, MeFOSAA, EtFOSAA, MeFOSE and EtFOSE include both linear and branched isomers. Results for all other analytes include the linear isomers only.

II.) Overall Assessment of Data:

The overall assessment of data was acceptable. Data qualifiers are summarized in Attachment A, Table 3 "Summary of Data Validation Actions".

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete and accurate case narrative in the data package. The data package contains results for all samples and method types listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The Chain of Custody records did not indicate if samples were received within the project QAPP temperature requirements of ≤ 10°C. All holding time criteria were met. No data were qualified.

III.) Mass Calibration:

INSTRUMENT: LCMS 7

Mass calibration was completed on October 13, 2023, to original equipment manufacturer's specifications.

IV.) LC-MS Tune:

Autotunes were performed on instrument LCMS 7 with acceptable results. All masses were acceptable. All instrument tunes met the project QAPP criteria.

V.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met with the exception of NFDHA which had a RSD over 20 percent in the ICAL. The NFDHA results in all samples were qualified as estimated (J/UJ) .

The ICVs met all project QAPP requirements. No data qualification was necessary.

VI.) Instrument Sensitivity Check (ISC):

Analyte concentrations were at LOQ. The ISC samples met all project QAPP requirements. No data qualification was necessary.

VII.) Continuing Calibration (CCV):

All Continuing Calibration Verification criteria met project QAPP criteria. with the following exceptions:

VIII.) Blanks:

Instrument Blanks:

The instrument blanks met all project QAPP criteria. No data qualification was necessary.

Method Blanks:

A method blank was prepared and analyzed for each preparation batch. The following results were detected in the method blank samples:

Method Blank ID	**Analyte**	**Blank Value (ng/l)**
9061764 2023/12/04	PFOSA	0.0041
	MeFOSA	0.00033
	EtFOSA	0.00024
	MeFOSE	0.0021
	EtFOSE	0.0011 J

The following sample results were qualified due to method blank results:

- PFOSA in sample LORNG_SB05033_00-01_10202023 was qualified as undetected (U).

Field Blanks:

Sample LORNG_EB105_10202023 was associated with this SDG.

Equipment Blanks (Rinse Blanks):

The rinse blank sample LORNG_EB105_10202023 was associated with this SDG. All associated results were non-detected.

IX.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analysis was performed on the following SDG sample:

Client Sample ID	Laboratory ID	QA/QC Batch
LORNG_SB05032_00-02_10202023	XKO184	9059219

The Percent Recoveries (%Rs) and Relative Percent Differences (RPDs) met project QAPP.

X.) Laboratory Control Samples / Laboratory Control Sample Duplicate (LCS / LCSD):

A spiked blank (LCS) was prepared and analyzed for the soil preparation batch. The following LCS recoveries did not meet project QAPP criteria:

- PFOSA, MeFOSA, EtFOSA, and MeFOSE in the LCS batch 9059219 were recovered above the upper control limit for the respective analytes. No action was taken because all associated results were either qualified as undetected or were reported as undetected.

XI.) Field Duplicates (FD):

The following FD samples were identified in the SDG. Relative Percent Differences (RPDs) for the detected analyte results were calculated to evaluate the field sampling and laboratory precision for the sample matrix.

Parent Sample ID (Lab ID)	Duplicate Sample ID (Lab ID)
LORNG_SB05031_01-02_10202023 (XKO186)	LORNG_SB05031_01-02_10202023FD (XKO187)

For the FD pair listed above, all RPDs were met.

XII.) Extracted Internal Standard Analytes (EIS):

All EIS in the samples in this SDG reported recoveries within criteria with the following exceptions:

- D3-MeFOSA and D5-EtFOSA recoveries were less than the lower control limit in samples LORNG_SB05032_00-02_10202023, LORNG_SB05031_01-02_10202023 . MeFOSA and EtFOSA in samples LORNG_SB05032_00-02_10202023, LORNG_SB05031_01-02_10202023 were qualified as estimated (J-/UJ)

XIII.) Ion Transitions:

Ion transition criteria were met. No qualification was necessary.

XIV.) Ion Ratio:

All ion ratio criteria were met. No data qualification was necessary.

XV.) Reporting limits (RLs):

All LOQs (Limit of Quantitation) were acceptable.

XVI.) Bile Salt Standard Retention Time Check:

The bile salt standard met the method retention time requirements.

XVII.) Reanalysis

Reanalysis was not required for any samples.

Attachment A

Tables

Table 1

Summary of Samples and Analytical Methods

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5479

						Method Class	PFAS	WetChem	
						Analysis Method	E1633DR	A2540G	D297487
						Fraction	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount
C3X5479	SB05031	LORNG_SB05031_00-01_10202023	XKO183	10/20/2023	SO	N	40	1	1
		LORNG_SB05031_01-02_10202023	XKO186	10/20/2023	SO	N	40	1	1
		LORNG_SB05031_01-02_10202023FD	XKO187	10/20/2023	SO	FD	40	1	1
	SB05032	LORNG_SB05032_00-02_10202023	XKO184	10/20/2023	SO	N	40	1	1
		LORNG_SB05032_00-02_10202023MS	XKO184MS	10/20/2023	SO	MS	40		
		LORNG_SB05032_00-02_10202023SD	XKO184SD	10/20/2023	SO	SD	40		
	SB05033	LORNG_SB05033_00-01_10202023	XKO185	10/20/2023	SO	N	40	1	1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/23/24
Checked by: RJT
Date: 3/19/24

Table 2

Summary of Analytical Results

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5479

			SDG	C3X5479								
			Location	SB05031						SB05032		SB05033
			Sample Date	10/20/2023						10/20/2023		10/20/2023
			Sample ID	LORNG_SB05031_00-01_10202023		LORNG_SB05031_01-02_10202023		LORNG_SB05031_01-02_10202023FD		LORNG_SB05032_00-02_10202023		LORNG_SB05033_00-01_10202023
			QC Code	N		N		FD		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0002	U	0.0002	U	0.0002	U	0.00013	J	0.0001	J
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00006	J	0.000075	J	0.000066	J	0.000092	J	0.00012	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000048	J	0.000088	J	0.00006	J	0.00016	J	0.00011	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000053	J	0.000064	J	0.000054	J	0.00011	J	0.000063	J
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00017	J	0.00021	J	0.00018	J	0.00036		0.00015	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.00013	J	0.00016	J	0.00013	J	0.00013	J	0.00011	J
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.0001	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.0001	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.0001	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.0001	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.0001	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00009	U	0.00009	U	0.000089	U	0.00011	U	0.000089	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000095	U	0.000095	U	0.000094	U	0.00012	U	0.000094	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00013	J	0.00032		0.00034		0.0014		0.00037	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00012	U	0.00012	U	0.00011	J	0.00012	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0019		0.0028		0.0023		0.006		0.0075	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00012	U	0.00012	U	0.00015	U	0.00012	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000097	U	0.000097	U	0.000097	U	0.00012	U	0.000096	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00021	U	0.00016	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00048	U	0.00038	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00048	U	0.00038	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00039	U	0.00039	U	0.00039	U	0.00049	U	0.00039	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00005	U	0.00005	U	0.00005	U	0.000064	U	0.00016	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0001	U	0.0001	UJ	0.0001	U	0.00013	UJ	0.0001	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00005	U	0.00005	UJ	0.00005	U	0.000064	UJ	0.00005	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00021	U	0.00016	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00016	U	0.00016	U	0.00021	U	0.00016	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U	0.0013	U	0.0013	U	0.0016	U	0.0013	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0016	U	0.0016	U	0.0021	U	0.0016	U

Prepared by: AKN
Date: 3/13/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5479

			SDG	C3X5479								
			Location	SB05031						SB05032		SB05033	
			Sample Date	10/20/2023						10/20/2023		10/20/2023	
			Sample ID	LORNG_SB05031_00-01_10202023		LORNG_SB05031_01-02_10202023		LORNG_SB05031_01-02_10202023FD		LORNG_SB05032_00-02_10202023		LORNG_SB05033_00-01_10202023	
			QC Code	N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0002	U	0.0002	U	0.0002	U	0.00025	U	0.0002	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00048	U	0.00038	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0001	U	0.0001	U	0.0001	U	0.00013	U	0.000039	J
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.0002	U	0.0002	U	0.00025	U	0.0002	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0025	UJ	0.0025	UJ	0.0025	UJ	0.0032	UJ	0.0025	UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00048	U	0.00038	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00038	U	0.00038	U	0.00038	U	0.00048	U	0.00038	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00029	U	0.00029	U	0.00029	U	0.00037	U	0.00029	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00082	U	0.00082	U	0.00082	U	0.001	U	0.00081	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0042	U	0.0042	U	0.0042	U	0.0052	U	0.0041	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0042	U	0.0042	U	0.0042	U	0.0052	U	0.0041	U

Prepared by: AKN
Date: 3/13/24
Checked by:
Date:

Table 3

Summary of Data Validation Actions

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5479

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5479	E1633DR	T	XKO183	LORNG_SB05031_00-01_10202023	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0025	U	0.0025	UJ	ICD	MG/KG
			XKO186	LORNG_SB05031_01-02_10202023	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0001	U	0.0001	UJ	EISL	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.00005	U	0.00005	UJ	EISL	MG/KG
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0025	U	0.0025	UJ	ICD	MG/KG
			XKO187	LORNG_SB05031_01-02_10202023FD	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0025	U	0.0025	UJ	ICD	MG/KG
			XKO184	LORNG_SB05032_00-02_10202023	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.00013	U	0.00013	UJ	EISL	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.000064	U	0.000064	UJ	EISL	MG/KG
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0032	U	0.0032	UJ	ICD	MG/KG
			XKO185	LORNG_SB05033_00-01_10202023	Perfluorooctane sulfonamide (PFOSA)	0.00016	J	0.00016	U	LBL/LCH	MG/KG
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0025	U	0.0025	UJ	ICD	MG/KG

Prepared by:AKN
Date:3/27/24
Checked by:
Date:

Table 4

Field Duplicate RPD Summary

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5479
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3X5479	LORNG_SB05031_01-02_10202023	LORNG_SB05031_01-02_10202023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0002	U	0.0002	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.000075	J	0.000066	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000088	J	0.00006	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.000064	J	0.000054	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00021	J	0.00018	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00016	J	0.00013	J	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00009	U	0.000089	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000095	U	0.000094	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00032		0.00034		6	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0028		0.0023		20	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000097	U	0.000097	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00016	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00039	U	0.00039	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00005	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0001	U	0.0001	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00005	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0013	U	0.0013	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0016	U	0.0016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0002	U	0.0002	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0002	U	0.0002	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0025	U	0.0025	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00038	U	0.00038	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00029	U	0.00029	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00082	U	0.00082	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0042	U	0.0042	U	NC	

Prepared by: AKN 2/2/24
Checked by: RJT 3/19/24

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5479
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0042	U	0.0042	U	NC	
			WetChem	TOTAL SOLIDS (PERCENT)	82		82		0	
				MOISTURE, PERCENT (PERCENT)	19		18		5	

Prepared by: AKN 2/2/24
Checked by: RJT 3/19/24

Attachment B

Completed DV Checklist with Notes

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 2B
PFAS – DoD QSM 5.4 Table B-24

Project Task:
Method: 1633 **Lab and SDG: _____**
Date: _____ **Reviewer: _____**

☐ **USEPA Stage 2B**

NOTE: *Per QSM 5.4 Table B-24: In addition to the requirements specified in Table B-24, ALL OF THE REQUIREMENTS CONTAINED IN EPA DRAFT METHOD 1633 (CURRENT VERSION) MUST BE MET.*

X **1.** ☐ **Case Narrative and Data Package Completeness**

- COC review
- Requested compound list reported
- Detection Limits meet QAPP and PALs and correct analysis level was reported (low/standard level)
- Results between MDL and LOQ qualified estimated (J), NDs reported to LOD
- Confirm transition ions in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard Used for Quantification*" table in current draft Method 1633) were used for all analytes

X **2.** ☐ **Holding Time and Sample Preservation/Collection**

- Sample conditions upon receipt at laboratory
- Holding times met (See Section 8.5 Holding Times in Method 1633 for more information and exceptions re NFDHA):
- ----Aqueous samples 28 days to extraction if stored by lab at 0-6 degrees C and protected from light/90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Soil/Solid samples 90 days to extraction if stored by lab at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Tissue samples 90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Biosolids samples 90 days to extraction if stored at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- Collection, preparation, and analysis date verification

X **3.** ☐ **QC Blanks**

- Completeness and evaluation
- Method blanks (preparation) ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Instrument blanks ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Field QC blanks –See discussion in Module 6 Section 3.3.1
- For all blank qualification actions follow Module 6 Table III (below) and discussions in Module 6 Section 3.3.1 and 4.7, and use ≤2x blank concentration for qualifying result U if sample result is > LOD and ≤ LOQ—

See Report for Method Blank Outliers.

Sample Result	Validated Result	Validation Qualifier
Non-detect or detect ≤LOD	Report at LOD	U
>LOQ but ≤5x blank	Report at sample result	J+
>LOQ and >5x blank	Report at sample result	None

X **4.** **Instrument Tuning and Instrument Sensitivity Check (ISC)**

- Mass Calibration performed annually or as recommended by the instrument manufacturer, whichever is more frequent, per Method 1633 Section 10.1
- Mass Calibration Verification ± 0.2 amu per Method 1633 (not specified in Table B-24)
- Valid Mass Calibration Verification before ICAL and sample analysis
- ISC concentrations at LOQ and recoveries ±30%
- Valid ISC prior to sample analysis

X **5.** **Initial Calibration**

- Sequence Log and Preparation Log Review
- Quantitative/Qualitative Standard Review - Confirm analytes with branched isomers in the initial calibration standards are identified in the lab report and that areas of branched isomers area included in the calibration response areas for those analytes (See Method 1633 Sections 10.1.1 and 15.1.3). See Report for Outliers
- Confirm lowest standard concentration is ≤ the LOQ.
- %RSD RFs ≤ 20; linear $r^2 \geq 0.99$ (DoD QSM 5.4 B-24). If %RSD >30 use judgment to J or R.
- Calibration standards recovered 70-130% of true value
- ICV ±30%
- Instrument Blank Review

X **6.** **Continuing Calibration**

- Verify the CCV was analyzed every 10 samples in sequence.
- %D ±30%
- Use judgment to J or R for %D > 50
- Instrument Blank Review

X **7.** **Laboratory Control Samples** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use) See Report for Outliers

- Completeness and evaluation
- Percent Recoveries within criteria
- RPD ≤30 if LCSD reported
- Ion ratios within limit for all analytes

X **8.** **Matrix Duplicate (Lab Duplicate) and Field Duplicate Precision**

- Completeness and evaluation
- Lab Duplicate RPD ≤ 30
- Field Duplicate use QAPP Limits or determine project limits

X **9.** **Matrix Spike Results** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)

- Completeness and evaluation
- Recovery within criteria and RPD ≤ 30

X **10.** **Ion Abundance Ratio (IAR)**

- As defined in Method 1633 4th Draft Section 14.3.5: AreaQ1/AreaQ2 where Q1 and Q2 are primary and secondary transition masses for detected compounds. Acceptance criteria are based on comparison with ion ratios established by the ICAL midpoint standard or daily CCV. If secondary transition masses are identified in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard*

Used for Quantification" table in current draft Method 1633), IAR must be within ±50% of IAR established for the ICAL midpoint standard or daily CCV per Section 15.1.3. Check ion ratios reported for LCS and samples.

X **11. □ Extracted Internal Standard (EIS)** See Report for Outliers

- Lab Recovery Limits B-24 (%R 20-150 vs ICAL midpoint or CCV)
- J for %R <20 and >200 (Module 6)
- R ND results if <10 and use judgment for detections
- RTs for samples and batch QC 0.40 minutes of CCV or initial calibration (if no CCV run)
- Analytes RT within +/- 0.1 minutes of their associated EIS

X **12. □ Non-Extracted Internal Standard (NIS) Recovery (%R >30 vs ICAL midpoint or CCV)**

- DoD Module 6 criteria: J/UJ results if <30 or use professional judgment for R (Note: Method 1633 Section 14.9 specifies NIS recoveries within 50-200% vs CCV)
- RTs for samples 0.40 minutes of CCV or initial calibration (if no CCV run)

X **13. □ Bile Salt Standard Retention Time (RT) Check**

Did the laboratory analyze a bile salt standard? (required by Method 1633/QSM 5.4 B-24 for all sample matrices) YES NO (circle one) YES

Is the RT of the bile salt standard >1 minute from the RT window for PFOS (including linear and branched isomers)? YES NO (circle one) YES

NOTE: Three bile acids (TDCA, TCDCA, and TUDCA) have the same (<1 amu) primary transition masses as PFOS: m/z 498.9 ->79.9 for PFOS, and m/z 499.2 ->79.9 for the bile acids. As a result, the presence of these bile acids in samples can cause high bias to PFOS concentrations if co-eluting with PFOS. The bile salt standard must demonstrate chromatographic separation so there is no co-elution with any PFOS isomer.

VALIDATA
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DATA VALIDATION SUMMARY REPORT - PFAS

COMPANY:	WSP USA Environment and Infrastructure
PROJECT NAME:	Loring AFB
SITE NAME:	Loring AFB RI-TO 1048
CONTRACTED LAB:	Bureau Veritas Laboratories, Mississauga, Ontario, Canada
PROJECT NUMBER:	775361701
QA/QC LEVEL:	EPA Stage 2B Validation Manual
ANALYTICAL METHOD:	EPA Draft Method 1633
VALIDATION GUIDELINES:	Quality Assurance Project Plan (QAPP) TO 1048 Quality Program Plan September 2023, USEPA Staged Validation Checklist – Stage 2B, Data Validation Guidelines Module 6, November 2022, Professional judgment
SAMPLE MATRIX:	Soil
TYPES OF ANALYSES:	Per fluorinated Alkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectroscopy (LC-MS/MS)
DATA VALIDATION DATE:	February 28, 2024
DATA REVIEWER(S):	Robert Thielke
SECONDARY REVIEWER(S):	Timothy Morris, Kevin Harmon
SDG NUMBER:	C3X5518
SAMPLING DATE(S):	October 18-22, 2023
SAMPLES:	See Table 1

Analyte	Acronym	Extracted Internal Standard
Perfluorobutanoic acid	PFBA	13C4-PFBA
Perfluoropentanoic acid	PFPeA	13C5-PFPeA
Perfluorohexanoic acid	PFHxA	13C2-PFHxA
Perfluoroheptanoic acid	PFHpA	13C4-PFHpA
Perfluorooctanoic acid	PFOA	13C4-PFOA
Perfluorononanoic acid	PFNA	13C5-PFNA
Perfluorodecanoic acid	PFDA	13C2-PFDA
Perfluoroundecanoic acid	PFUnA	13C2-PFUnA
Perfluorododecanoic acid	PFDoA	13C2-PFDoA
Perfluorotridecanoic acid	PFTrDA	13C2-PFTeDA
Perfluorotetradecanoic acid	PFTeA	13C2-PFTeDA
Perfluorobutanesulfonic acid	PFBS	13C3-PFBS
Perfluoropentanesulfonic acid	PFPeS	13C5-PFPeA
Perfluorohexanesulfonic acid	PFHxS	18O2-PFHxS
Perfluoroheptanesulfonic acid	PFHpS	13C4-PFHpA
Perfluorooctanesulfonic acid	PFOS	13C4-PFOS
Ethylperfluorooctanesulfonamidoacetic acid	EtFOSAA	D5-EtFOSAA
Methylperfluorooctanesulfonamidoacetic acid	MeFOSAA	D3-MeFOSAA
4:2 Fluorotelomersulfonic acid	4:2 FTS	13C2-4:2FTS
6:2 Fluorotelomersulfonic acid	6:2 FTS	13C2-6:2FTS
8:2 Fluorotelomersulfonic acid	8:2 FTS	13C2-8:2FTS
Hexafluoropropylene oxide dimer acid	HFPO-DA	13C3-HFPO-DA
4,8-dioxa-3H-perfluorononanoic acid	ADONA	13C4-PFHpA
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	13C2-PFDoA
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	13C8-PFOS
Perfluoro-3-methoxypropanoic acid	PFMPA	13C2PFHxA
Perfluoro-4-methoxybutanoic acid	PFMBA	13C3-PFPeA
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	13C3-PFBS
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	13C3-PFHxA

QAPP Validation Qualifiers

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Bureau Veritas Laboratories – SDG: C3X5518

PFAS (Per- and polyfluoroalkyl substances)

SUMMARY

I.) General:

The samples were extracted and analyzed by LC/MS/MS for a selected list of PFAS using EPA Draft Method 1633. The results for PFHxS, PFOA, PFOS, PFNA, PFOSA, MeFOSA, EtFOSA, MeFOSAA, EtFOSAA, MeFOSE and EtFOSE include both linear and branched isomers. Results for all other analytes include the linear isomers only.

II.) Overall Assessment of Data:

The overall assessment of data was acceptable. Data qualifiers are summarized in Attachment A, Table 3 "Summary of Data Validation Actions".

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete and accurate case narrative in the data package. The data package contains results for all samples and method types listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The Chain of Custody records did not indicate if samples were received within the project QAPP temperature requirements of ≤ 10°C. All holding time criteria were met. No data were qualified.

III.) Mass Calibration:

INSTRUMENT: LCMS 7

Mass calibration was completed on October 13, 2023, to original equipment manufacturer's specifications for analytical batches 7985688.

IV.) LC-MS Tune:

Autotunes were performed on instrument LCMS 7 with acceptable results. All masses were acceptable. All instrument tunes met the project QAPP criteria.

V.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met. The ICALs and ICVs met all project QAPP requirements. No data qualification was necessary.

VI.) Instrument Sensitivity Check (ISC):

Analyte concentrations were at LOQ. The ISC samples met all project QAPP requirements. No data qualification was necessary.

VII.) Continuing Calibration (CCV):

All Continuing Calibration Verification criteria met project QAPP criteria with the following exceptions:

- MeFOSAA in the 12/3/2023 CCV was outside the 30%D criteria. MeFOSAA results in samples LORNG_SB05038_00-02_10202023, LORNG_SB01039_00-02_10182023, LORNG_SB01041_00-02_10182023, LORNG_SB01042_00-01_10182023, LORNG_SB01034_08-10_10182023, LORNG_SB01034_08-10_10182023FD, LORNG_SB01035_00-01_10182023, and LORNG_SB01035_06-08_10182023 were qualified as estimated (J/UJ)
- 8:2-FTS in the 12/4/2023 CCV was outside the 30%D criteria. 8:2-FTS in samples LORNG_SB01030_00-01_10182023, LORNG_SB01030_07-09_10182023, LORNG_SB01031_00-01_10182023, LORNG_SB01031_08-10_10182023, LORNG_SB01032_00-01_10182023, LORNG_SB01032_05-07_10182023, LORNG_SB01033_00-01_10182023, LORNG_SB01034_00-01_10182023, LORNG_SB01035_12-14_10182023, LORNG_SB01036_00-01_10192023, LORNG_SB01036_07-09_10192023, LORNG_SB01036_07-09_10192023FD, LORNG_SB01036_13-15_10192023, LORNG_SB01037_00-01_10192023, LORNG_SB01037_08-10_10192023, and LORNG_SB01040_05-07_10192023 were qualified as estimated (J/UJ).

VIII.) Blanks:

Instrument Blanks:

The instrument blanks met all project QAPP criteria. No data qualification was necessary.

Method Blanks:

A method blank was prepared and analyzed for each preparation batch. The following results were detected in the method blank samples:

Method Blank ID	**Analyte**	**Blank Value (mg/kg)**
9055344 2023/12/09	PFOSA	0.13 J (ng/l)
9061764 2023/12/04	PFOSA	0.0057

Method Blank ID	Analyte	Blank Value (mg/kg)
	MeFOSA	0.00037
	EtFOSA	0.00025
	MeFOSE	0.0032
	EtFOSE	0.0016 J
9067161 2023/12/03	PFOSA	0.0031
	MeFOSA	0.00031
	EtFOSA	0.00022
	MeFOSE	0.0031
	EtFOSE	0.0033
9072441 2023/12/04	PFOSA	0.0029
	MeFOSA	0.00083
	EtFOSA	0.00017 J
	MeFOSE	0.013
	EtFOSE	0.00087 J
9075979 2023/12/04	PFOSA	0.0021
	MeFOSA	0.0049
	EtFOSA	0.00017 J
	MeFOSE	0.15
	EtFOSE	0.00076 J

The following sample results were qualified due to method blank results:

- PFOSA in samples LORNG_EB106_10182023, LORNG_EB107_10182023, LORNG_SB01034_00-01_10182023, LORNG_SB01038_00-02_10182023, LORNG_SB01041_00-02_10182023, LORNG_SB01035_00-01_10182023, LORNG_SB01036_00-01_10192023, and LORNG_SB01037_08-10_10192023 were qualified as undetected (U).
- PFOSA in samples LORNG_SB01032_00-01_10182023, LORNG_SB01037_00-01_10192023, and LORNG_SB01040_00-01_10192023 were qualified as estimated (J+).
- EtFOSE in samples LORNG_SB01038_00-02_10182023, LORNG_SB01042_00-01_10182023, LORNG_SB01034_08-10_10182023, LORNG_SB01034_08-10_10182023FD, LORNG_SB01035_00-01_10182023, and LORNG_SB01035_06-08_10182023 were qualified as estimated (J+).
- EtFOSE in sample LORNG_SB01039_00-02_10182023 was qualified as undetected (U).

Field Blanks:

Samples LORNG_EB103_10182023, LORNG_EB104_10192023, LORNG_EB105_10202023, LORNG_EB106_10212023, and LORNG_EB107_10222023 were associated with this SDG.

Equipment Blanks (Rinse Blanks):

The rinse blank samples LORNG_EB103_10182023, LORNG_EB104_10192023, LORNG_EB105_10202023, LORNG_EB106_10212023, and LORNG_EB107_10222023 were associated with this SDG. The following results were detected in the rinse blank samples:

Client Sample ID	Analyte	Blank Value (ng/l)
LORNG_EB103_10182023	PFOSA	0.23 J
LORNG_EB106_10182023	PFOSA	0.13 J
	PFTEDA	0.23 J
	MeFOSE	2.3 J
	EtFOSE	3.0 J
LORNG_EB107_10182023	PFOSA	0.24 J

The following sample results were qualified due to rinse blank results:

- PFOSA in samples LORNG_SB01030_00-01_10182023, LORNG_SB01038_00-02_10182023, LORNG_SB01041_00-02_10182023, LORNG_SB01035_00-01_10182023 were qualified as undetected (U).
- PFOSA in samples LORNG_SB01032_00-01_10182023, LORNG_SB01034_00-01_10182023, LORNG_SB22012_00-01_10212023, LORNG_SB22012_01-02_10212023 were qualified as estimated (J+).
- EtFOSE in sample LORNG_SB07029_00-01_10212023 was qualified as undetected (J+).

IX.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analysis was performed on the following SDG samples:

Client Sample ID	Laboratory ID	QA/QC Batch
LORNG_SB01034_00-01_10182023	XKO349	9061764
LORNG_SB01041_00-02_10182023	XKO352	9067161
LORNG_SB01031_08-10_10182023	XKO345	9098397
LORNG_SB01035_12-14_10182023	XKO421	9072441
LORNG_SB12020_00-01_10192023	XKO435	9075979
LORNG_SB12023_00-02_10192023	XKO520	9078741
LORNG_SB18034_06-08-10212023FD	XKO598	9081462
LORNG_SB18037_00-01-10212023	XKO600	9091842
LORNG_SB18050_00-01_10192023	XKO522	9084358
LORNG_SB20016_00-01_10202023	XKO547	9094781

The Percent Recoveries (%Rs) and Relative Percent Differences (RPDs) met project QAPP criteria with the following exceptions:

- The MeFOSA RPD was outside acceptance criteria of 30% RPD in the LORNG_SB01041_00-02_10182023 MS/MSD analysis. J/UJ the MeFOSA result for sample LORNG_SB01041_00-02_10182023.
- The PFTRDA recovery was above the upper control limit in the LORNG_SB20016_00-01_10202023 MS/MSD analysis. J+/None the LORNG_SB20016_00-01_10202023 result for PFTRDA.
- The Perfluorododecanesulfonic acid recovery was below the lower control limit in the LORNG_SB20016_00-01_10202023 MS/MSD analysis. J-/UJ the LORNG_SB20016_00-01_10202023 result for Perfluorododecanesulfonic acid.

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X.) Laboratory Control Samples / Laboratory Control Sample Duplicate (LCS / LCSD):

A spiked blank (LCS) was prepared and analyzed for the water and soil preparation batches. The following LCS recoveries did not meet project QAPP criteria:

- PFOSA, MeFOSA, EtFOSA, and MeFOSE in the LCS batch 9061764 and 9072441 were recovered above the upper control limit for the respective analytes. PFOSA, MeFOSA, EtFOSA, and MeFOSE results in samples LORNG_SB01030_00-01_10182023, LORNG_SB01030_07-09_10182023, LORNG_SB01031_00-01_10182023, LORNG_SB01031_08-10_10182023, LORNG_SB01032_00-01_10182023, LORNG_SB01032_05-07_10182023, LORNG_SB01033_00-01_10182023, LORNG_SB01034_00-01_10182023, LORNG_SB01035_12-14_10182023, LORNG_SB01036_00-01_10192023, LORNG_SB01036_07-09_10192023, LORNG_SB01036_07-09_10192023FD, LORNG_SB01036_13-15_10192023, LORNG_SB01037_00-01_10192023, LORNG_SB01037_08-10_10192023, and LORNG_SB01040_05-07_10192023 were qualified as estimated (J+/None).
- PFOSA, MeFOSA, EtFOSE, and MeFOSE in the LCS batch 9067161 were recovered above the upper control limit for the respective analytes. PFOSA, MeFOSA, EtFOSE, and MeFOSE in samples LORNG_SB01038_00-02_10202023, LORNG_SB01039_00-02_10182023, LORNG_SB01041_00-02_10182023, LORNG_SB01042_00-01_10182023, LORNG_SB01034_08-10_10182023, LORNG_SB01034_08-10_10182023FD, LORNG_SB01035_00-01_10182023, and LORNG_SB01035_06-08_10182023 were qualified as estimated (J+/None)
- PFOSA, MeFOSA, and MeFOSE in LCS batch 9075979 and were recovered above the upper control limit for the respective analytes. PFOSA, MeFOSA, and MeFOSE in samples LORNG_SB01040_05-07_10192023, LORNG_SB01040_11-13_10192023, LORNG_SB12020_00-01_10192023 , LORNG_SB12021_00-01_10192023, LORNG_SB12021_04-06_10192023, LORNG_SB05034_00-01_10202023, LORNG_SB12020_04-06_10192023, LORNG_SB12020_04-06_10192023FD, LORNG_SB12022_00-02_10192023, LORNG_SB12023_00-02_10192023, and LORNG_SB12024_00-02_10192023 were qualified as estimated (J+/None)

XI.) Field Duplicates (FD):

The following FD samples were identified in the SDG. Relative Percent Differences (RPDs) for the detected analyte results were calculated to evaluate the field sampling and laboratory precision for the sample matrix.

Parent Sample ID (Lab ID)	**Duplicate Sample ID (Lab ID)**
LORNG_SB01034_08-10_10182023 (XKO417)	LORNG_SB01034_08-10_10182023FD (XKO418)
LORNG_SB01036_07-09_10192023 (XKO423)	LORNG_SB01036_07-09_10192023FD (XKO428)
LORNG_SB07027_06-08_10202023 (XKO541)	LORNG_SB07027_06-08_10202023FD (XKO542)
LORNG_SB12020_04-06_10192023 (XKO517)	LORNG_SB12020_04-06_10192023FD (XKO518)
LORNG_SB18034_06-08-10212023 (XKO597)	LORNG_SB18034_06-08-10212023FD (XKO598)
LORNG_SB18038_00-01-10212023 (XKO601)	LORNG_SB18038_00-01-10212023FD (XKO602)

For FD pairs listed above, the following table lists RPDs and qualification actions.

SAMPLE/DUPLICATE	ANALYTE	RPD	QC LIMIT	QUALIFICATION
LORNG_SB12020_04-06_10192023 / LORNG_SB12020_04-06_10192023FD	PFHxS PFOS	36% 53%	For Soils </= 30%	J
LORNG_SB07027_06-08_10202023/ LORNG_SB07027_06-08_10202023FD	PFHpA PFOA PFNA PFHxS PFHpS PFOSA	38% 41% 60% 49% 55% 132%	For Soils </= 30%	J
LORNG_SB01034_08-10_10182023/ LORNG_SB01034_08-10_10182023FD	PFHxS PFOS	36% 37%	For Soils </= 30%	J

XII.) Extracted Internal Standard Analytes (EIS):

All EIS in the samples in this SDG reported recoveries within criteria. No data were qualified.

XIII.) Ion Transitions:

Ion transition criteria were met. No qualification was necessary.

XIV.) Ion Ratio:

All ion ratio criteria were met. No data qualification was necessary.

XV.) Reporting limits (RLs):

All LOQs (Limit of Quantitation) were acceptable. Due to high concentrations, dilutions were required for selected analytes in the following samples:

- LORNG_SB01037_00-01_10192 for PFOS
- LORNG_SB01040_00-01_10192 for PFOS
- LORNG_SB05038_00-02_10202 for PFOS
- LORNG_SB07027_00-01_10202 for PFOS
- LORNG_SB07027_06-08_10202 for PFOS and PFHxS
- LORNG_SB07027_06-08_10202 for PFOS and PFHxS
- LORNG_SB20015_00-01_10202 for PFOS

XVI.) Bile Salt Standard Retention Time Check:

The bile salt standard met the method retention time requirements.

XVII.) Reanalysis

All samples on QC batch 9061764 (2023/12/04) were re-extracted and re-analyzed on QC batch 9098397 (2023/12/14) due to blank contamination of EtFOSA, MeFOSA, MeFOSE, and PFOSA.

The following samples on QC batch 9061764 (2023/12/04) were re-extracted and re-analyzed in QC batch 9098397 (2023/12/14) due to unacceptable EIS recoveries:

- LORNG_SB01030_00-01_10182
- LORNG_SB01031_00-01_10182
- LORNG_SB01033_00-01_10182
- LORNG_SB01034_00-01_10182.

Attachment A

Tables

Table 1

Summary of Samples and Analytical Methods

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

						Method Class	PFAS	WetChem
						Analysis Method	E1633DR	D297487
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
C3X5518	FIELDQC	LORNG_EB103_10182023	XKO416	10/18/2023	WQ	EB	40	
		LORNG_EB104_10192023	XKO515	10/19/2023	WQ	EB	40	
		LORNG_EB105_10202023	XKO565	10/20/2023	WQ	EB	40	
		LORNG_EB106_10212023	XKO596	10/21/2023	WQ	EB	40	
		LORNG_EB107_10222023	XKO627	10/22/2023	WQ	EB	40	
	SB01030	LORNG_SB01030_00-01_10182023	XKO342	10/18/2023	SO	N	40	1
		LORNG_SB01030_07-09_10182023	XKO343	10/18/2023	SO	N	40	1
	SB01031	LORNG_SB01031_00-01_10182023	XKO344	10/18/2023	SO	N	40	1
		LORNG_SB01031_08-10_10182023	XKO345	10/18/2023	SO	N	40	1
		LORNG_SB01031_08-10_10182023MS	XKO345MS	10/18/2023	SO	MS	3	
		LORNG_SB01031_08-10_10182023SD	XKO345SD	10/18/2023	SO	SD	3	
	SB01032	LORNG_SB01032_00-01_10182023	XKO346	10/18/2023	SO	N	40	1
		LORNG_SB01032_05-07_10182023	XKO347	10/18/2023	SO	N	40	1
	SB01033	LORNG_SB01033_00-01_10182023	XKO348	10/18/2023	SO	N	40	1
		LORNG_SB01033_00-01_10182023LR	XKO348LR	10/18/2023	SO	LR		1
	SB01034	LORNG_SB01034_00-01_10182023	XKO349	10/18/2023	SO	N	40	1
		LORNG_SB01034_00-01_10182023MS	XKO349MS	10/18/2023	SO	MS	40	
		LORNG_SB01034_00-01_10182023SD	XKO349SD	10/18/2023	SO	SD	40	
		LORNG_SB01034_08-10_10182023	XKO417	10/18/2023	SO	N	40	1
		LORNG_SB01034_08-10_10182023FD	XKO418	10/18/2023	SO	FD	40	1
	SB01035	LORNG_SB01035_00-01_10182023	XKO419	10/18/2023	SO	N	40	1
		LORNG_SB01035_06-08_10182023	XKO420	10/18/2023	SO	N	40	1
		LORNG_SB01035_12-14_10182023	XKO421	10/18/2023	SO	N	40	1
		LORNG_SB01035_12-14_10182023MS	XKO421MS	10/18/2023	SO	MS	40	
		LORNG_SB01035_12-14_10182023SD	XKO421SD	10/18/2023	SO	SD	40	
	SB01036	LORNG_SB01036_00-01_10192023	XKO422	10/19/2023	SO	N	40	1
		LORNG_SB01036_07-09_10192023	XKO423	10/19/2023	SO	N	40	1
		LORNG_SB01036_07-09_10192023FD	XKO428	10/19/2023	SO	FD	40	1
		LORNG_SB01036_13-15_10192023	XKO429	10/19/2023	SO	N	40	1
	SB01037	LORNG_SB01037_00-01_10192023	XKO430	10/19/2023	SO	N	40	1
		LORNG_SB01037_08-10_10192023	XKO431	10/19/2023	SO	N	40	1
	SB01038	LORNG_SB01038_00-02_10182023	XKO350	10/18/2023	SO	N	40	1
	SB01039	LORNG_SB01039_00-02_10182023	XKO351	10/18/2023	SO	N	40	1
	SB01040	LORNG_SB01040_00-01_10192023	XKO432	10/19/2023	SO	N	40	1
		LORNG_SB01040_05-07_10192023	XKO433	10/19/2023	SO	N	40	1
		LORNG_SB01040_11-13_10192023	XKO434	10/19/2023	SO	N	40	1
	SB01041	LORNG_SB01041_00-02_10182023	XKO352	10/18/2023	SO	N	40	1
		LORNG_SB01041_00-02_10182023MS	XKO352MS	10/18/2023	SO	MS	40	
		LORNG_SB01041_00-02_10182023SD	XKO352SD	10/18/2023	SO	SD	40	
	SB01042	LORNG_SB01042_00-01_10182023	XKO353	10/18/2023	SO	N	40	1
	SB05034	LORNG_SB05034_00-01_10202023	XKO516	10/20/2023	SO	N	40	1
		LORNG_SB05034_08-10_10202023	XKO528	10/20/2023	SO	N	40	1
	SB05035	LORNG_SB05035_00-01_10202023	XKO529	10/20/2023	SO	N	40	1
		LORNG_SB05035_05-07_10202023	XKO530	10/20/2023	SO	N	40	1
		LORNG_SB05035_05-07_10202023LR	XKO530LR	10/20/2023	SO	LR		1
		LORNG_SB05035_10-12_10202023	XKO531	10/20/2023	SO	N	40	1
	SB05036	LORNG_SB05036_00-01_10202023	XKO532	10/20/2023	SO	N	40	1
		LORNG_SB05036_05-07_10202023	XKO533	10/20/2023	SO	N	40	1

Prepared by:AKN
Date:1/23/24
Checked by:
Date:

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

						Method Class	PFAS	WetChem
						Analysis Method	E1633DR	D297487
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
C3X5518	SB05037	LORNG_SB05037_00-01_10202023	XKO534	10/20/2023	SO	N	40	1
	SB05038	LORNG_SB05038_00-02_10202023	XKO538	10/20/2023	SO	N	40	1
	SB07026	LORNG_SB07026_00-01_10202023	XKO539	10/20/2023	SO	N	40	1
		LORNG_SB07026_06-08_10202023	XKO566	10/20/2023	SO	N	40	1
		LORNG_SB07026_13-15_10202023	XKO567	10/20/2023	SO	N	40	1
	SB07027	LORNG_SB07027_00-01_10202023	XKO540	10/20/2023	SO	N	40	1
		LORNG_SB07027_06-08_10202023	XKO541	10/20/2023	SO	N	40	1
		LORNG_SB07027_06-08_10202023FD	XKO542	10/20/2023	SO	FD	40	1
		LORNG_SB07027_13-15_10202023	XKO544	10/20/2023	SO	N	40	1
	SB07028	LORNG_SB07028_00-01_10212023	XKO568	10/21/2023	SO	N	40	1
		LORNG_SB07028_06-08_10212023	XKO569	10/21/2023	SO	N	40	1
	SB07029	LORNG_SB07029_00-01_10212023	XKO570	10/21/2023	SO	N	40	1
		LORNG_SB07029_04-06_10212023	XKO571	10/21/2023	SO	N	40	1
	SB12020	LORNG_SB12020_00-01_10192023	XKO435	10/19/2023	SO	N	40	1
		LORNG_SB12020_00-01_10192023MS	XKO435MS	10/19/2023	SO	MS	40	
		LORNG_SB12020_00-01_10192023SD	XKO435SD	10/19/2023	SO	SD	40	
		LORNG_SB12020_04-06_10192023	XKO517	10/19/2023	SO	N	40	1
		LORNG_SB12020_04-06_10192023FD	XKO518	10/19/2023	SO	FD	40	1
	SB12021	LORNG_SB12021_00-01_10192023	XKO436	10/19/2023	SO	N	40	1
		LORNG_SB12021_04-06_10192023	XKO437	10/19/2023	SO	N	40	1
	SB12022	LORNG_SB12022_00-02_10192023	XKO519	10/19/2023	SO	N	40	1
	SB12023	LORNG_SB12023_00-02_10192023	XKO520	10/19/2023	SO	N	40	1
		LORNG_SB12023_00-02_10192023MS	XKO520MS	10/19/2023	SO	MS	40	
		LORNG_SB12023_00-02_10192023SD	XKO520SD	10/19/2023	SO	SD	40	
	SB12024	LORNG_SB12024_00-02_10192023	XKO521	10/19/2023	SO	N	40	1
	SB18034	LORNG_SB18034_00-01_10212023	XKO572	10/21/2023	SO	N	40	1
		LORNG_SB18034_06-08-10212023	XKO597	10/21/2023	SO	N	40	1
		LORNG_SB18034_06-08-10212023FD	XKO598	10/21/2023	SO	FD	40	1
		LORNG_SB18034_06-08-10212023MS	XKO598MS	10/21/2023	SO	MS	40	
		LORNG_SB18034_06-08-10212023SD	XKO598SD	10/21/2023	SO	SD	40	
		LORNG_SB18034_13-15-10212023	XKO599	10/21/2023	SO	N	40	1
	SB18035	LORNG_SB18035_00-01_10222023	XKO628	10/22/2023	SO	N	40	1
		LORNG_SB18035_04-06_10222023	XKO629	10/22/2023	SO	N	40	1
	SB18036	LORNG_SB18036_00-01_10222023	XKO630	10/22/2023	SO	N	40	1
		LORNG_SB18036_06-08_10222023	XKO631	10/22/2023	SO	N	40	1
	SB18037	LORNG_SB18037_00-01-10212023	XKO600	10/22/2023	SO	N	40	1
		LORNG_SB18037_00-01-10212023MS	XKO600MS	10/22/2023	SO	MS	40	
		LORNG_SB18037_00-01-10212023SD	XKO600SD	10/22/2023	SO	SD	40	
		LORNG_SB18037_04-06_10222023	XKO632	10/22/2023	SO	N	40	1
	SB18038	LORNG_SB18038_00-01-10212023	XKO601	10/21/2023	SO	N	40	1
		LORNG_SB18038_00-01-10212023FD	XKO602	10/21/2023	SO	FD	40	1
		LORNG_SB18038_05-07-10212023	XKO603	10/21/2023	SO	N	40	1
	SB18039	LORNG_SB18039_00-01-10212023	XKO604	10/21/2023	SO	N	40	1
		LORNG_SB18039_01-03-10212023	XKO605	10/21/2023	SO	N	40	1
	SB18040	LORNG_SB18040_00-01-10212023	XKO606	10/21/2023	SO	N	40	1
		LORNG_SB18040_07-09-10212023	XKO607	10/21/2023	SO	N	40	1

Prepared by:AKN
Date:1/23/24
Checked by:
Date:

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

						Method Class	PFAS	WetChem
						Analysis Method	E1633DR	D297487
						Fraction	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount
C3X5518	SB18050	LORNG_SB18050_00-01_10192023	XKO522	10/19/2023	SO	N	40	1
		LORNG_SB18050_00-01_10192023MS	XKO522MS	10/19/2023	SO	MS	40	
		LORNG_SB18050_00-01_10192023SD	XKO522SD	10/19/2023	SO	SD	40	
		LORNG_SB18050_04-06_10192023	XKO523	10/19/2023	SO	N	40	1
		LORNG_SB18050_11-13_10192023	XKO524	10/19/2023	SO	N	40	1
	SB18051	LORNG_SB18051_00-01_10192023	XKO525	10/19/2023	SO	N	40	1
		LORNG_SB18051_03-05_10192023	XKO526	10/19/2023	SO	N	40	1
	SB20015	LORNG_SB20015_00-01_10202023	XKO545	10/20/2023	SO	N	40	1
		LORNG_SB20015_04-06_10202023	XKO546	10/20/2023	SO	N	40	1
	SB20016	LORNG_SB20016_00-01_10202023	XKO547	10/20/2023	SO	N	40	1
		LORNG_SB20016_00-01_10202023MS	XKO547MS	10/20/2023	SO	MS	40	
		LORNG_SB20016_00-01_10202023SD	XKO547SD	10/20/2023	SO	SD	40	
		LORNG_SB20016_02-04_10202023	XKO548	10/20/2023	SO	N	40	1
		LORNG_SB20016_02-04_10202023MS	XKO548MS	10/20/2023	SO	MS	40	
		LORNG_SB20016_02-04_10202023SD	XKO548SD	10/20/2023	SO	SD	40	
	SB22012	LORNG_SB22012_00-01_10212023	XKO573	10/21/2023	SO	N	40	1
		LORNG_SB22012_01-02_10212023	XKO574	10/21/2023	SO	N	40	1
	SB22013	LORNG_SB22013_00-01_10212023	XKO575	10/21/2023	SO	N	40	1
		LORNG_SB22013_01-02_10212023	XKO576	10/21/2023	SO	N	40	1

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/23/24
Checked by:
Date:

Table 2

Summary of Analytical Results

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

		SDG		C3X55																	
		Location		SB01030				SB01031				SB01032				SB010	
		Sample Date		10/18/2023				10/18/2023				10/18/2023				10/18/2	
		Sample ID		LORNG_SB01030_00-01_10182023		LORNG_SB01030_07-09_10182023		LORNG_SB01031_00-01_10182023		LORNG_SB01031_08-10_10182023		LORNG_SB01032_00-01_10182023		LORNG_SB01032_05-07_10182023		LORNG_SB0-01_101	
		QC Code		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00075	J	0.00018	U	0.0003	J	0.00018	U	0.0019		0.000086	J	0.00024	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0019		0.000091	U	0.00036	J	0.000092	U	0.0026		0.00013	J	0.00078	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0014		0.000091	U	0.00046		0.000092	U	0.0028		0.00011	J	0.00089	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0008		0.000091	U	0.00025	J	0.000092	U	0.00098		0.000057	J	0.00032	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0014		0.000091	U	0.00049		0.000092	U	0.0022		0.00012	J	0.00045	
		Perfluorononanoic acid (PFNA)	MG/KG	0.00036		0.00011	U	0.00011	J	0.00012	U	0.00078		0.00012	U	0.00013	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000044	J	0.000091	U	0.00012	U	0.000092	U	0.000087	J	0.000099	U	0.00011	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000051	J	0.000091	U	0.00012	U	0.000092	U	0.000081	J	0.000099	U	0.00011	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00012	U	0.000091	U	0.00012	U	0.000092	U	0.00012	U	0.000099	U	0.00011	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00012	U	0.000091	U	0.00012	U	0.000092	U	0.00012	U	0.000099	U	0.00011	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00012	U	0.000091	U	0.00012	U	0.000092	U	0.00012	U	0.000099	U	0.00011	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00011	J	0.000081	U	0.000076	J	0.000082	U	0.000059	J	0.000088	U	0.000086	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00012	J	0.000085	U	0.000076	J	0.000086	U	0.000071	J	0.000093	U	0.0001	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0028		0.00011	J	0.0032		0.000084	U	0.0023		0.00034		0.0017	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00015	J	0.00011	U	0.00014	U	0.00011	U	0.00011	J	0.00012	U	0.00013	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.019		0.000084	U	0.003		0.000085	U	0.049		0.0031		0.001	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00014	U	0.00011	U	0.00014	U	0.00011	U	0.00018	J	0.00012	U	0.00013	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00011	U	0.000088	U	0.00011	U	0.000089	U	0.00013	J	0.000095	U	0.0001	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00019	U	0.00015	U	0.00019	U	0.00015	U	0.00019	U	0.00016	U	0.00017	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00043	U	0.00034	U	0.00047	U	0.00035	U	0.00044	U	0.00037	U	0.0004	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00042	U	0.00034	U	0.00047	U	0.00035	U	0.00044	U	0.00037	U	0.0004	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00044	UJ	0.00035	UJ	0.00049	UJ	0.00036	UJ	0.00061	J	0.00038	U	0.00042	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000053	U	0.000046	U	0.000063	U	0.000045	U	0.0013	J+	0.000049	U	0.000052	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00012	U	0.000091	U	0.00012	U	0.000091	U	0.00012	U	0.000098	U	0.0001	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000058	U	0.000046	U	0.000059	U	0.000046	U	0.000059	U	0.000049	U	0.000054	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00018	U	0.00015	U	0.0002	U	0.00015	U	0.00019	U	0.00016	U	0.00017	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00018	U	0.00015	U	0.0002	U	0.00015	U	0.00019	U	0.00016	U	0.00017	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0014	U	0.0011	U	0.0016	U	0.0011	U	0.0015	U	0.0012	U	0.0013	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0019	U	0.0015	U	0.0019	U	0.0015	U	0.0019	U	0.0016	U	0.0017	

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X55										
			Location	SB01030		SB01031		SB01032		SB010				
			Sample Date	10/18/2023		10/18/2023		10/18/2023		10/18/2				
			Sample ID	LORNG_SB01030_00-01_10182023		LORNG_SB01030_07-09_10182023		LORNG_SB01031_00-01_10182023		LORNG_SB01031_08-10_10182023		LORNG_SB01032_00-01_10182023		LORNG_SB01032_05-07_10182023		LORNG_SB0-01_101	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00023	U	0.00018	U	0.00024	U	0.00018	U	0.00024	U	0.0002	U	0.00021	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00043	U	0.00034	U	0.00044	U	0.00035	U	0.00044	U	0.00037	U	0.0004	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00012	U	0.000091	U	0.00012	U	0.000092	U	0.00012	U	0.000099	U	0.00011	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00023	U	0.00018	U	0.00024	U	0.00018	U	0.00024	U	0.0002	U	0.00021	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0029	U	0.0023	U	0.003	U	0.0023	U	0.003	U	0.0025	U	0.0027	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00043	U	0.00034	U	0.00044	U	0.00035	U	0.00044	U	0.00037	U	0.0004	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00043	U	0.00034	U	0.00044	U	0.00035	U	0.00044	U	0.00037	U	0.0004	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00033	U	0.00026	U	0.00034	U	0.00026	U	0.00034	U	0.00028	U	0.00031	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00094	U	0.00074	U	0.00096	U	0.00075	U	0.00096	U	0.0008	U	0.00087	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0047	U	0.0038	U	0.0049	U	0.0038	U	0.0049	U	0.0041	U	0.0044	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0047	U	0.0038	U	0.0049	U	0.0038	U	0.0049	U	0.0041	U	0.0044	

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Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

		SDG		18									
		Location		33	SB01034				SB01035				
		Sample Date		023	10/18/2023				10/18/2023				
		Sample ID		01033_0 32023	LORNG_SB01034_0 0-01_10182023		LORNG_SB01034_0 8-10_10182023		LORNG_SB01034_0 8-10_10182023FD		LORNG_SB01035_0 0-01_10182023		LORNG_SB01035_0 6-08_10182023		LORNG_SB01035_1 2-14_10182023	
		QC Code			N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	J	0.00058	J	0.00019	U	0.00019	U	0.00068	J	0.00019	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG		0.00093		0.000097	U	0.000096	U	0.00089		0.000093	U	0.000097	U
		Perfluorohexanoic acid (PFHxA)	MG/KG		0.00049		0.000097	U	0.000096	U	0.00074		0.000043	J	0.000052	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG		0.00052		0.000097	U	0.000096	U	0.0003		0.000093	U	0.000097	U
		Perfluorooctanoic acid (PFOA)	MG/KG		0.00067		0.000097	U	0.000096	U	0.00049		0.000056	J	0.000059	J
		Perfluorononanoic acid (PFNA)	MG/KG	U	0.00048		0.00012	U	0.00012	U	0.00058		0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG	U	0.00016	J	0.000097	U	0.000096	U	0.00005	J	0.000093	U	0.000097	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	U	0.00018	J	0.000097	U	0.000096	U	0.000092	J	0.000093	U	0.000097	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	U	0.00012	U	0.000097	U	0.000096	U	0.0001	U	0.000093	U	0.000097	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U	0.00012	U	0.000097	U	0.000096	U	0.0001	U	0.000093	U	0.000097	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U	0.00012	U	0.000097	U	0.000096	U	0.0001	U	0.000093	U	0.000097	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	J	0.000027	J	0.000086	U	0.000085	U	0.000048	J	0.000083	U	0.000086	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	J	0.000045	J	0.000091	U	0.00009	U	0.000096	U	0.000087	U	0.000091	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG		0.0026		0.0001	J	0.000057	J	0.0013		0.00048		0.00035	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U	0.00015	J	0.00012	U	0.00011	U	0.00012	U	0.00011	U	0.00012	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG		0.028		0.00054		0.00037		0.013		0.0022		0.0013	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U	0.00016	J	0.00012	U	0.00012	U	0.000058	J	0.00011	U	0.00012	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U	0.00011	J	0.000094	U	0.000093	U	0.000095	J	0.00009	U	0.000094	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U	0.0002	U	0.00016	U	0.00016	U	0.00017	U	0.00015	U	0.00016	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U	0.00045	U	0.00037	U	0.00036	U	0.00038	U	0.00035	U	0.00036	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	U	0.00045	U	0.00037	U	0.00036	U	0.00038	U	0.00035	U	0.00036	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	UJ	0.0015	J	0.00038	U	0.00037	U	0.0004	U	0.00036	U	0.00038	UJ
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U	0.00042	J+	0.000049	U	0.000048	U	0.00009	U	0.000047	U	0.000049	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U	0.00012	U	0.000097	U	0.000096	U	0.0001	U	0.000093	U	0.000097	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U	0.00006	U	0.000049	U	0.000048	U	0.000051	U	0.000047	U	0.000049	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U	0.0002	U	0.00016	UJ	0.00016	UJ	0.00017	UJ	0.00015	UJ	0.00016	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U	0.0002	U	0.00016	U	0.00016	U	0.00017	U	0.00015	U	0.00016	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U	0.0015	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	U	0.002	U	0.0026	J+	0.0027	J+	0.0027	J+	0.0026	J+	0.0016	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG		18												
			Location		33		SB01034						SB01035				
			Sample Date		023		10/18/2023						10/18/2023				
			Sample ID		01033_0 32023		LORNG_SB01034_0 0-01_10182023		LORNG_SB01034_0 8-10_10182023		LORNG_SB01034_0 8-10_10182023FD		LORNG_SB01035_0 0-01_10182023		LORNG_SB01035_0 6-08_10182023		LORNG_SB01035_1 2-14_10182023	
			QC Code				N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.00024	U	0.00019	U	0.00019	U	0.0002	U	0.00019	U	0.00019	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.00045	U	0.00037	U	0.00036	U	0.00038	U	0.00035	U	0.00036	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.00012	U	0.000097	U	0.000096	U	0.0001	U	0.000093	U	0.000097	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.00024	U	0.00019	U	0.00019	U	0.0002	U	0.00019	U	0.00019	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.003	U	0.0024	U	0.0024	U	0.0026	U	0.0023	U	0.0024	U		
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.00045	U	0.00037	U	0.00036	U	0.00038	U	0.00035	U	0.00036	U		
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.00045	U	0.00037	U	0.00036	U	0.00038	U	0.00035	U	0.00036	U		
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.00035	U	0.00028	U	0.00028	U	0.00029	U	0.00027	U	0.00028	U		
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.00098	U	0.00079	U	0.00078	U	0.00083	U	0.00076	U	0.00079	U		
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.005	U	0.004	U	0.004	U	0.0042	U	0.0038	U	0.004	U		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.005	U	0.004	U	0.004	U	0.0042	U	0.0038	U	0.004	U		

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X551															
			Location	SB01036								SB01037				SB01			
			Sample Date	10/19/2023								10/19/2023				10/18/			
			Sample ID	LORNG_SB01036_00-01_10192023		LORNG_SB01036_07-09_10192023		LORNG_SB01036_07-09_10192023FD		LORNG_SB01036_13-15_10192023		LORNG_SB01037_00-01_10192023		LORNG_SB01037_08-10_10192023		LORNG_S00-02_10			
			QC Code	N		N		FD		N		N		N		N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result			
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00031	J	0.00018	U	0.00018	U	0.000089	J	0.00048	J	0.00019	U	0.00033			
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00062		0.00009	U	0.00009	U	0.00013	J	0.0012		0.000095	J	0.00053			
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.002		0.000075	J	0.000085	J	0.000081	J	0.00067		0.000053	J	0.00023			
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00026		0.00009	U	0.00009	U	0.000049	J	0.00041		0.000094	U	0.00023			
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00088		0.000073	J	0.000067	J	0.00018	J	0.0007		0.000094	U	0.00036			
		Perfluorononanoic acid (PFNA)	MG/KG	0.000084	J	0.00011	U	0.00011	U	0.000072	J	0.00021	J	0.00012	U	0.00036			
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.00015	J	0.000094	U	0.0001			
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.00018	J	0.000094	U	0.0001			
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.000087	J	0.000094	U	0.0001			
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.000093	J	0.000094	U	0.0001			
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.000038	J	0.000094	U	0.0001			
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000091	U	0.00008	U	0.00008	U	0.000091	U	0.000048	J	0.000084	U	0.000089			
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000096	U	0.000084	U	0.000084	U	0.000097	U	0.000072	J	0.000088	U	0.000094			
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0016		0.000063	J	0.000072	J	0.00075		0.0022		0.00021		0.00045			
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00011	U	0.00011	U	0.000072	J	0.0001	J	0.00011	U	0.00012			
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0034		0.00017	J	0.000083	U	0.0063		0.017		0.00056		0.0089			
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00011	U	0.00011	U	0.00012	U	0.000064	J	0.00011	U	0.00012			
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000098	U	0.000087	U	0.000087	U	0.000099	U	0.0002	J	0.000091	U	0.000097			
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00017	U	0.00015	U	0.00015	U	0.00017	U	0.0028		0.00015	U	0.00016			
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00038	U	0.00034	U	0.00034	U	0.00039	U	0.0004	U	0.00035	U	0.00038			
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00038	U	0.00034	U	0.00034	U	0.00039	U	0.0063		0.00018	J	0.00038			
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0004	UJ	0.00035	UJ	0.00035	UJ	0.0004	UJ	0.011	J	0.00056	J	0.00021			
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00013	U	0.000045	U	0.000045	U	0.000052	U	0.0062	J+	0.000031	U	0.000056			
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.00011	U	0.000094	U	0.0001			
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000051	U	0.000045	U	0.000045	U	0.000052	U	0.000054	U	0.000047	U	0.00005			
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00017	U	0.00015	U	0.00015	U	0.00017	U	0.00018	U	0.00015	U	0.00016			
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00017	U	0.00015	U	0.00015	U	0.00017	U	0.00018	U	0.00015	U	0.00016			
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U	0.0011	U	0.0011	U	0.0013	U	0.0013	U	0.0012	U	0.0013			
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0017	U	0.0015	U	0.0015	U	0.0017	U	0.0018	U	0.0015	U	0.0026			

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X551															
			Location	SB01036								SB01037				SB01			
			Sample Date	10/19/2023								10/19/2023				10/18/			
			Sample ID	LORNG_SB01036_00-01_10192023		LORNG_SB01036_07-09_10192023		LORNG_SB01036_07-09_10192023FD		LORNG_SB01036_13-15_10192023		LORNG_SB01037_00-01_10192023		LORNG_SB01037_08-10_10192023		LORNG_S00-02_10			
			QC Code	N		N		FD		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result			
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0002	U	0.00018	U	0.00018	U	0.00021	U	0.00022	U	0.00019	U	0.0002			
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00038	U	0.00034	U	0.00034	U	0.00039	U	0.0004	U	0.00035	U	0.00038			
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0001	U	0.00009	U	0.00009	U	0.0001	U	0.00011	U	0.000094	U	0.0001			
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.00018	U	0.00018	U	0.00021	U	0.00022	U	0.00019	U	0.0002			
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0026	U	0.0022	U	0.0023	U	0.0026	U	0.0027	U	0.0024	U	0.0025			
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00038	U	0.00034	U	0.00034	U	0.00039	U	0.0004	U	0.00035	U	0.00038			
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00038	U	0.00034	U	0.00034	U	0.00039	U	0.0004	U	0.00035	U	0.00038			
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00029	U	0.00026	U	0.00026	U	0.0003	U	0.00031	U	0.00027	U	0.00029			
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00083	U	0.00073	U	0.00073	U	0.00084	U	0.00088	U	0.00077	U	0.00082			
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0042	U	0.0037	U	0.0037	U	0.0043	U	0.0044	U	0.0039	U	0.0041			
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0042	U	0.0037	U	0.0037	U	0.0043	U	0.0044	U	0.0039	U	0.0041			

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	3													
			Location	038		SB01039		SB01040						SB01041		SB01042	
			Sample Date	2023		10/18/2023		10/19/2023						10/18/2023		10/18/2023	
			Sample ID	B01038_182023		LORNG_SB01039_00-02_10182023		LORNG_SB01040_00-01_10192023		LORNG_SB01040_05-07_10192023		LORNG_SB01040_11-13_10192023		LORNG_SB01041_00-02_10182023		LORNG_SB01042_00-01_10182023	
			QC Code			N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	J		0.00022	U	0.0004	J	0.00017	U	0.0002	U	0.00049	J	0.00032	J
		Perfluoropentanoic acid (PFPeA)	MG/KG			0.00005	J	0.00055		0.000087	U	0.000067	J	0.00063	J	0.00084	
		Perfluorohexanoic acid (PFHxA)	MG/KG	J		0.000051	J	0.00055		0.000032	J	0.000048	J	0.0003	J	0.00062	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	J		0.00011	U	0.00035		0.000087	U	0.000043	J	0.00021	J	0.00045	
		Perfluorooctanoic acid (PFOA)	MG/KG			0.000074	J	0.0011		0.000075	J	0.000089	J	0.00063		0.00089	
		Perfluorononanoic acid (PFNA)	MG/KG			0.00014	U	0.00079		0.00011	U	0.00013	U	0.0005	J	0.0002	J
		Perfluorodecanoic acid (PFDA)	MG/KG	U		0.00011	U	0.00025	J	0.000087	U	0.0001	U	0.00017	J	0.00012	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	U		0.00011	U	0.00019	J	0.000087	U	0.0001	U	0.00026	J	0.00012	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	U		0.00011	U	0.000048	J	0.000087	U	0.0001	U	0.00023	U	0.00012	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U		0.00011	U	0.00011	U	0.000087	U	0.0001	U	0.00023	U	0.00012	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U		0.00011	U	0.00011	U	0.000087	U	0.0001	U	0.00023	U	0.00012	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	U		0.000098	U	0.000062	J	0.000078	U	0.000091	U	0.00011	J	0.00009	J
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	U		0.0001	U	0.00004	J	0.000082	U	0.000096	U	0.000097	J	0.00011	J
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG			0.00013	J	0.0025		0.00056		0.0004		0.0027		0.0023	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U		0.00013	U	0.00012	J	0.0001	U	0.00012	U	0.00021	J	0.000079	J
		Perfluorooctanesulfonic acid (PFOS)	MG/KG			0.0003		0.042		0.0021		0.0021		0.012		0.0032	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U		0.00013	U	0.00016	J	0.0001	U	0.00012	U	0.00028	U	0.00014	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U		0.00011	U	0.00016	J	0.000084	U	0.000099	U	0.00022	U	0.00011	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U		0.00018	U	0.00017	U	0.00014	U	0.00017	U	0.00037	U	0.00019	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U		0.00041	U	0.0004	U	0.00033	U	0.00038	U	0.00086	U	0.00045	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	U		0.00041	U	0.0004	U	0.00033	U	0.00016	J	0.00086	U	0.00045	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	J		0.00043	U	0.00041	U	0.00034	UJ	0.0016		0.00089	U	0.00046	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U		0.000055	U	0.00055	J+	0.000044	U	0.00015	J+	0.00017	U	0.00006	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U		0.00011	U	0.00011	U	0.000087	U	0.0001	U	0.00023	UJ	0.00012	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U		0.000055	U	0.000053	U	0.000044	U	0.000051	U	0.00012	U	0.00006	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U		0.00018	UJ	0.00017	U	0.00014	U	0.00017	U	0.00037	UJ	0.00019	UJ
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U		0.00018	U	0.00017	U	0.00014	U	0.00017	U	0.00037	U	0.00019	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U		0.0014	U	0.0013	U	0.0011	U	0.0013	U	0.0029	U	0.0015	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	J+		0.0022	U	0.0017	U	0.0014	U	0.0017	U	0.0059	J+	0.0032	J+

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

SDG					3														
Location					038		SB01039		SB01040							SB01041		SB01042	
Sample Date					2023		10/18/2023		10/19/2023							10/18/2023		10/18/2023	
Sample ID					B01038_ 182023		LORNG_SB01039_ 00-02_10182023		LORNG_SB01040_ 00-01_10192023		LORNG_SB01040_ 05-07_10192023		LORNG_SB01040_ 11-13_10192023			LORNG_SB01041_ 00-02_10182023		LORNG_SB01042_ 00-01_10182023	
QC Code							N		N		N		N			N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.00022	U	0.00021	U	0.00017	U	0.0002	U			0.00046	U	0.00024	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.00041	U	0.0004	U	0.00033	U	0.00038	U			0.00086	U	0.00045	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.00011	U	0.00011	U	0.000087	U	0.0001	U			0.00023	U	0.00012	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.00022	U	0.00021	U	0.00017	U	0.0002	U			0.00046	U	0.00024	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.0028	U	0.0027	U	0.0022	U	0.0026	U			0.0058	U	0.003	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.00041	U	0.0004	U	0.00033	U	0.00038	U			0.00086	U	0.00045	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.00041	U	0.0004	U	0.00033	U	0.00038	U			0.00086	U	0.00045	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.00032	U	0.00031	U	0.00025	U	0.00029	U			0.00066	U	0.00034	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.0009	U	0.00086	U	0.00071	U	0.00083	U			0.0019	U	0.00097	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.0046	U	0.0044	U	0.0036	U	0.0042	U			0.0095	U	0.0049	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.0046	U	0.0044	U	0.0036	U	0.0042	U			0.0095	U	0.0049	U	

Prepared by: AKN
Date: 3/8/24
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Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG													
			Location	SB05034				SB05035						SB05036		
			Sample Date	10/20/2023				10/20/2023						10/20/2023		
			Sample ID	LORNG_SB05034_00-01_10202023		LORNG_SB05034_08-10_10202023		LORNG_SB05035_00-01_10202023		LORNG_SB05035_05-07_10202023		LORNG_SB05035_10-12_10202023		LORNG_SB05036_00-01_10202023		LORNG_S 05-07_10
			QC Code	N		N		N		N		N		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00029	J	0.00018	U	0.00021	U	0.0002	U	0.0002	U	0.00036	J	0.00018
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00019	J	0.000089	U	0.000047	J	0.000099	U	0.0001	U	0.00029	J	0.00009
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00019	J	0.000089	U	0.000053	J	0.000099	U	0.0001	U	0.00024	J	0.00009
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00016	J	0.000089	U	0.000057	J	0.000099	U	0.0001	U	0.00017	J	0.00009
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00043		0.000089	U	0.00018	J	0.000099	U	0.0001	U	0.0005		0.00009
		Perfluorononanoic acid (PFNA)	MG/KG	0.00027	J	0.00011	U	0.000073	J	0.00012	U	0.00013	U	0.00026	J	0.00011
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00023	J	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.000054	J	0.00009
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00013	J	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00013	J	0.00009
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000098	J	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00012	U	0.00009
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00012	U	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00012	U	0.00009
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00012	U	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00012	U	0.00009
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00011	U	0.000079	U	0.000091	U	0.000087	U	0.000089	U	0.000069	J	0.00008
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00012	U	0.000083	U	0.000096	U	0.000092	U	0.000094	U	0.00011	U	0.000085
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00027	J	0.000081	U	0.00011	J	0.00009	U	0.000091	U	0.0007		0.000083
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00015	U	0.00011	U	0.00012	U	0.00012	U	0.00012	U	0.00014	U	0.00011
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0046		0.000082	U	0.0013		0.000091	U	0.000093	U	0.0039		0.000084
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00015	U	0.00011	U	0.00012	U	0.00012	U	0.00012	U	0.00014	U	0.00011
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00012	U	0.000086	U	0.000099	U	0.000095	U	0.000096	U	0.00011	U	0.000087
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0002	U	0.00014	U	0.00017	U	0.00016	U	0.00016	U	0.00019	U	0.00015
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00046	U	0.00033	U	0.00039	U	0.00037	U	0.00038	U	0.00044	U	0.00034
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00046	U	0.00033	U	0.00039	U	0.00037	U	0.00038	U	0.00044	U	0.00034
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00048	U	0.00035	U	0.0004	U	0.00038	U	0.00039	U	0.00046	U	0.00035
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000062	U	0.000045	U	0.000051	U	0.000049	U	0.00005	U	0.000059	U	0.000045
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00012	U	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00012	U	0.00009
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000062	U	0.000045	U	0.000051	U	0.000049	U	0.00005	U	0.000059	U	0.000045
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0002	U	0.00014	U	0.00017	U	0.00016	U	0.00016	U	0.00019	U	0.00015
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0002	U	0.00014	U	0.00017	U	0.00016	U	0.00016	U	0.00019	U	0.00015
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0015	U	0.0011	U	0.0013	U	0.0012	U	0.0013	U	0.0015	U	0.0011
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.002	U	0.0014	U	0.0017	U	0.0016	U	0.0016	U	0.0019	U	0.0015

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG																
			Location	SB05034				SB05035						SB05036					
			Sample Date	10/20/2023				10/20/2023						10/20/2023					
			Sample ID	LORNG_SB05034_00-01_10202023		LORNG_SB05034_08-10_10202023		LORNG_SB05035_00-01_10202023		LORNG_SB05035_05-07_10202023		LORNG_SB05035_10-12_10202023		LORNG_SB05036_00-01_10202023		LORNG_S05-07_10	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00025	U	0.00018	U	0.00021	U	0.0002	U	0.0002	U	0.00024	U	0.00018	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00046	U	0.00033	U	0.00039	U	0.00037	U	0.00038	U	0.00044	U	0.00034	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00012	U	0.000089	U	0.0001	U	0.000099	U	0.0001	U	0.00012	U	0.00009	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00025	U	0.00018	U	0.00021	U	0.0002	U	0.0002	U	0.00024	U	0.00018	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0031	U	0.0022	U	0.0026	U	0.0025	U	0.0025	U	0.003	U	0.0023	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00046	U	0.00033	U	0.00039	U	0.00037	U	0.00038	U	0.00044	U	0.00034	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00046	U	0.00033	U	0.00039	U	0.00037	U	0.00038	U	0.00044	U	0.00034	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00035	U	0.00026	U	0.0003	U	0.00028	U	0.00029	U	0.00034	U	0.00026	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.001	U	0.00072	U	0.00084	U	0.0008	U	0.00081	U	0.00096	U	0.00073	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0051	U	0.0037	U	0.0042	U	0.0041	U	0.0041	U	0.0049	U	0.0037	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0051	U	0.0037	U	0.0042	U	0.0041	U	0.0041	U	0.0049	U	0.0037	

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG		C3X5518														
			Location			SB05037		SB05038		SB07026							SB0		
			Sample Date			10/20/2023		10/20/2023		10/20/2023							45		
			Sample ID		B05036_ 202023	LORNG_SB05037_ 00-01_10202023		LORNG_SB05038_ 00-02_10202023		LORNG_SB07026_ 00-01_10202023		LORNG_SB07026_ 06-08_10202023		LORNG_SB07026_ 13-15_10202023		LORNG_SB07027_ 00-01_10202023			
			QC Code			N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	U	0.00029	U	0.00024	J	0.00049	J	0.00018	U	0.00019	U	0.002	U			
		Perfluoropentanoic acid (PFPeA)	MG/KG	U	0.00015	U	0.00061		0.00093		0.00011	J	0.000049	J	0.00048	J			
		Perfluorohexanoic acid (PFHxA)	MG/KG	U	0.00015	U	0.00043		0.00047		0.00012	J	0.00006	J	0.0005	J			
		Perfluoroheptanoic acid (PFHpA)	MG/KG	U	0.00015	U	0.00052		0.00077		0.000084	J	0.000036	J	0.00099	U			
		Perfluorooctanoic acid (PFOA)	MG/KG	U	0.00009	J	0.00092		0.0012		0.00015	J	0.000053	J	0.0011	J			
		Perfluorononanoic acid (PFNA)	MG/KG	U	0.00018	U	0.00075		0.00099		0.00012	J	0.00012	U	0.00072	J			
		Perfluorodecanoic acid (PFDA)	MG/KG	U	0.00015	U	0.00035		0.00044		0.000071	J	0.000096	U	0.00099	U			
		Perfluoroundecanoic acid (PFUnA)	MG/KG	U	0.00015	U	0.00036		0.00048		0.000091	U	0.000096	U	0.00099	U			
		Perfluorododecanoic acid (PFDoA)	MG/KG	U	0.00015	U	0.000068	J	0.000041	J	0.000091	U	0.000096	U	0.00099	U			
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U	0.00015	U	0.00012	U	0.0001	U	0.000091	U	0.000096	U	0.00099	U			
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U	0.00015	U	0.00012	U	0.0001	U	0.000091	U	0.000096	U	0.00099	U			
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	U	0.00013	U	0.000069	J	0.000033	J	0.000081	U	0.000085	U	0.00025	J			
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	U	0.00014	U	0.0001	J	0.000037	J	0.000085	U	0.00009	U	0.00045	J			
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	U	0.00013	U	0.0024		0.00078		0.00068		0.0003		0.0077				
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U	0.00014	J	0.00016	J	0.000059	J	0.00011	U	0.00011	U	0.00089	J			
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	U	0.00044		0.055		0.0068		0.005		0.0013		0.23				
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U	0.00017	U	0.0003		0.0002	J	0.00011	U	0.00012	U	0.0012	U			
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U	0.00014	U	0.00023	J	0.00012	J	0.000088	U	0.000093	U	0.00095	U			
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U	0.00024	U	0.00019	U	0.00016	U	0.00015	U	0.00016	U	0.0016	U			
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U	0.00055	U	0.00044	U	0.00038	U	0.00034	U	0.00036	U	0.0037	U			
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	U	0.00055	U	0.00038	J	0.00055	J	0.00017	J	0.00036	U	0.0037	U			
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	U	0.00056	U	0.0044		0.0035		0.00035	U	0.00037	U	0.0038	U			
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U	0.000073	U	0.0011		0.0002	J	0.00063		0.000048	U	0.0068				
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U	0.00015	U	0.00012	U	0.0001	U	0.000091	U	0.000096	U	0.00099	U			
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U	0.000073	U	0.000058	U	0.00005	U	0.000046	U	0.000048	U	0.0005	U			
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U	0.00024	U	0.00019	UJ	0.00016	U	0.00015	U	0.00016	U	0.0016	U			
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U	0.00024	U	0.00019	U	0.00016	U	0.00015	U	0.00016	U	0.0016	U			
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U	0.0018	U	0.0015	U	0.0013	U	0.0011	U	0.0012	U	0.012	U			
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	U	0.0024	U	0.0019	U	0.0016	U	0.0015	U	0.0016	U	0.016	U			

Prepared by: AKN
Date: 3/8/24
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Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

		SDG																	
		Location	7027		SB07027				SB07028				SB07029						
		Sample Date	19		45219				10/21/2023				10/21/2023						
		Sample ID	LORNG_SB07027_06-08_10202023		LORNG_SB07027_06-08_10202023FD		LORNG_SB07027_13-15_10202023		LORNG_SB07028_00-01_10212023		LORNG_SB07028_06-08_10212023		LORNG_SB07029_00-01_10212023		LORNG_S04-06_10				
		QC Code	N		FD		N		N		N		N		N				
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result			
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00016	J	0.00015	J	0.000099	J	0.00018	U	0.00022	U	0.0002	U	0.00019			
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00039	J	0.00035	J	0.00041	J	0.000092	U	0.00011	U	0.000053	J	0.000097			
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0008		0.00081		0.00093		0.000092	U	0.000049	J	0.000033	J	0.000097			
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00038	J	0.00026	J	0.00028		0.000092	U	0.00011	U	0.000035	J	0.000097			
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0068		0.0045		0.0018		0.000092	U	0.000062	J	0.000099	U	0.000097			
		Perfluorononanoic acid (PFNA)	MG/KG	0.00056	J	0.0003	J	0.00012	U	0.00011	U	0.00014	U	0.00012	U	0.00012			
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000037	J	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00042		0.00036		0.00076		0.000081	U	0.000097	U	0.000088	U	0.000086			
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00095		0.00071		0.0012		0.000086	U	0.0001	U	0.000093	U	0.000091			
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.033	J	0.02	J	0.012		0.00014	J	0.00051		0.000078	J	0.000088			
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0051	J	0.0029	J	0.00011	U	0.00011	U	0.00013	U	0.00012	U	0.00012			
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.066	J	0.066	J	0.000087	U	0.00017	J	0.0001	U	0.00033		0.00029			
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.000082	J	0.00011	U	0.00011	U	0.00011	U	0.00013	U	0.00012	U	0.00012			
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00014	J	0.00009	U	0.000091	U	0.000088	U	0.00011	U	0.000096	U	0.000093			
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00015	U	0.00015	U	0.00015	U	0.00018	U	0.00016	U	0.00016			
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00036	U	0.00035	U	0.00035	U	0.00034	U	0.00041	U	0.00037	U	0.00036			
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00046	J	0.00043	J	0.00035	U	0.00034	U	0.00041	U	0.00037	U	0.00036			
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00021	J	0.00036	U	0.00036	U	0.00035	U	0.00042	U	0.00039	U	0.00038			
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0019	J	0.00039	J	0.000047	U	0.000046	U	0.000055	U	0.00005	U	0.000048			
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097			
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000048	U	0.000047	U	0.000047	U	0.000046	U	0.000055	U	0.00005	U	0.000048			
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00015	U	0.00015	U	0.00015	U	0.00018	U	0.00016	U	0.00016			
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00015	U	0.00015	U	0.00015	U	0.00018	U	0.00016	U	0.00016			
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0012	U	0.0012	U	0.0012	U	0.0011	U	0.0014	U	0.0012	U	0.0012			
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0015	U	0.0015	U	0.0015	U	0.0018	U	0.0013	U	0.0016			

Prepared by: AKN
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Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG												
			Location	7027		SB07027				SB07028				SB07029	
			Sample Date	19		45219				10/21/2023				10/21/2023	
			Sample ID	LORNG_SB07027_06-08_10202023		LORNG_SB07027_06-08_10202023FD		LORNG_SB07027_13-15_10202023		LORNG_SB07028_00-01_10212023		LORNG_SB07028_06-08_10212023		LORNG_SB07029_00-01_10212023	LORNG_S04-06_10
			QC Code	N		FD		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00019	U	0.00019	U	0.00019	U	0.00018	U	0.00022	U	0.0002	U	0.00019
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00036	U	0.00035	U	0.00035	U	0.00034	U	0.00041	U	0.00037	U	0.00036
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.000096	U	0.000094	U	0.000094	U	0.000092	U	0.00011	U	0.000099	U	0.000097
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00019	U	0.00019	U	0.00019	U	0.00018	U	0.00022	U	0.0002	U	0.00019
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0024	U	0.0023	U	0.0024	U	0.0023	U	0.0027	U	0.0025	U	0.0024
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00036	U	0.00035	U	0.00035	U	0.00034	U	0.00041	U	0.00037	U	0.00036
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00036	U	0.00035	U	0.00035	U	0.00034	U	0.00041	U	0.00037	U	0.00036
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00028	U	0.00027	U	0.00027	U	0.00026	U	0.00031	U	0.00029	U	0.00028
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00078	U	0.00076	U	0.00076	U	0.00074	U	0.00089	U	0.00081	U	0.00079
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.004	U	0.0039	U	0.0039	U	0.0038	U	0.0045	U	0.0041	U	0.004
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.004	U	0.0039	U	0.0039	U	0.0038	U	0.0045	U	0.0041	U	0.004

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

				SDG	C3X5518									
				Location		SB12020			SB12021				SB12022	
				Sample Date		10/19/2023			10/19/2023				10/19/2023	
				Sample ID	B07029_212023	LORNG_SB12020_00-01_10192023		LORNG_SB12020_04-06_10192023	LORNG_SB12020_04-06_10192023FD		LORNG_SB12021_00-01_10192023		LORNG_SB12021_04-06_10192023		LORNG_SB12022_00-02_10192023	
				QC Code		N		N	FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**		Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG		U	0.0001	J	0.00021	U	0.0002	U	0.00019	U	0.00019	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG		U	0.00013	J	0.0001	U	0.000074	J	0.000095	U	0.000097	U	0.00012	J
		Perfluorohexanoic acid (PFHxA)	MG/KG		U	0.00016	J	0.000049	J	0.000089	J	0.00005	J	0.000097	U	0.00017	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG		U	0.000094	J	0.0001	U	0.00005	J	0.000095	U	0.000097	U	0.000067	J
		Perfluorooctanoic acid (PFOA)	MG/KG		U	0.00016	J	0.0001	U	0.0001	J	0.000095	U	0.000097	U	0.00012	J
		Perfluorononanoic acid (PFNA)	MG/KG		U	0.000073	J	0.00013	U	0.00013	U	0.00012	U	0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		Perfluorododecanoic acid (PFDoA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG		U	0.000042	J	0.000091	U	0.000024	J	0.000085	U	0.000086	U	0.000037	J
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG		U	0.000069	J	0.000096	U	0.000038	J	0.000089	U	0.000091	U	0.000042	J
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG		U	0.00081		0.00025	J	0.00036	J	0.000097	J	0.00012	J	0.0005	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG		U	0.00012	U	0.00012	U	0.00012	U	0.00011	U	0.00012	U	0.00011	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG			0.0099		0.0021	J	0.0036	J	0.0029		0.0016		0.00058	
		Perfluorononanesulfonic acid (PFNS)	MG/KG		U	0.00012	U	0.00012	U	0.00012	U	0.00011	U	0.00012	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG		U	0.000095	U	0.000099	U	0.000097	U	0.000092	U	0.000093	U	0.000092	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG		U	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00016	U	0.00016	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG		U	0.00037	U	0.00038	U	0.00038	U	0.00036	U	0.00036	U	0.00036	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG		U	0.00037	U	0.00038	U	0.00038	U	0.00036	U	0.00036	U	0.00036	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG		U	0.00038	U	0.0004	U	0.00039	U	0.00037	U	0.00038	U	0.00037	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG		U	0.00005	U	0.000051	U	0.00005	U	0.000048	U	0.000049	U	0.000048	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG		U	0.000099	U	0.0001	U	0.0001	U	0.000095	U	0.000097	U	0.000096	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG		U	0.00005	U	0.000051	U	0.00005	U	0.000048	U	0.000049	U	0.000048	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG		U	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00016	U	0.00016	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG		U	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00016	U	0.00016	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG		U	0.0012	U	0.0013	U	0.0013	U	0.0012	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG		U	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

		SDG		C3X5518														
		Location			SB12020							SB12021				SB12022		
		Sample Date			10/19/2023							10/19/2023				10/19/2023		
		Sample ID		B07029_212023	LORNG_SB12020_00-01_10192023		LORNG_SB12020_04-06_10192023		LORNG_SB12020_04-06_10192023FD			LORNG_SB12021_00-01_10192023		LORNG_SB12021_04-06_10192023		LORNG_SB12022_00-02_10192023		
		QC Code			N		N		FD			N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.0002	U	0.00021	U	0.0002	U		0.00019	U	0.00019	U	0.00019	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.00037	U	0.00038	U	0.00038	U		0.00036	U	0.00036	U	0.00036	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.000099	U	0.0001	U	0.0001	U		0.000095	U	0.000097	U	0.000096	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.0002	U	0.00021	U	0.0002	U		0.00019	U	0.00019	U	0.00019	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.0025	U	0.0026	U	0.0025	U		0.0024	U	0.0024	U	0.0024	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.00037	U	0.00038	U	0.00038	U		0.00036	U	0.00036	U	0.00036	U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.00037	U	0.00038	U	0.00038	U		0.00036	U	0.00036	U	0.00036	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.00028	U	0.00029	U	0.00029	U		0.00027	U	0.00028	U	0.00028	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.0008	U	0.00083	U	0.00082	U		0.00078	U	0.00079	U	0.00078	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.0041	U	0.0042	U	0.0042	U		0.0039	U	0.004	U	0.0039	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.0041	U	0.0042	U	0.0042	U		0.0039	U	0.004	U	0.0039	U	

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG														
			Location	SB12023		SB12024		SB18034									
			Sample Date	10/19/2023		10/19/2023		10/21/2023									
			Sample ID	LORNG_SB12023_00-02_10192023		LORNG_SB12024_00-02_10192023		LORNG_SB18034_00-01_10212023		LORNG_SB18034_06-08-10212023		LORNG_SB18034_06-08-10212023FD		LORNG_SB18034_13-15-10212023		LORNG_S 00-01_10	
			QC Code	N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.000094	J	0.00072	J	0.00011	J	0.0002	U	0.0002	U	0.00019	U	0.00022	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00022	J	0.0012		0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00032		0.0017		0.00004	J	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00015	J	0.00091		0.000045	J	0.0001	U	0.0001	U	0.000095	U	0.000053	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00025		0.0012		0.000088	J	0.0001	U	0.0001	U	0.000095	U	0.0001	
		Perfluorononanoic acid (PFNA)	MG/KG	0.00012	U	0.00032		0.000095	J	0.00013	U	0.00013	U	0.00012	U	0.000084	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000088	U	0.000097	U	0.000087	U	0.000089	U	0.000089	U	0.000084	U	0.000096	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000093	U	0.000037	J	0.000092	U	0.000094	U	0.000094	U	0.000089	U	0.0001	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0004		0.00056		0.000089	U	0.000092	UJ	0.000092	UJ	0.000086	U	0.000099	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00013	U	0.00012	U	0.00012	U	0.00012	U	0.00011	U	0.00013	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0026		0.012		0.00047		0.00023	J	0.00022	J	0.00027		0.00058	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00013	U	0.00012	U	0.00012	U	0.00012	U	0.00011	U	0.00013	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000095	U	0.0001	U	0.000094	U	0.000097	U	0.000097	U	0.000091	U	0.0001	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00018	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00018	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00037	U	0.00041	U	0.00037	U	0.00038	U	0.00038	U	0.00035	U	0.00041	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00037	U	0.00041	U	0.00037	U	0.00038	U	0.00038	U	0.00035	U	0.00041	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00038	U	0.00042	U	0.00038	U	0.00039	U	0.00039	U	0.00037	U	0.00042	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000049	U	0.000054	U	0.000049	U	0.00005	U	0.00005	U	0.000047	U	0.000054	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000049	U	0.000054	U	0.000049	U	0.00005	U	0.00005	U	0.000047	U	0.000054	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00018	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00018	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00018	U	0.00016	U	0.00016	U	0.00016	U	0.00015	U	0.00018	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0012	U	0.0014	U	0.0012	U	0.0013	U	0.0013	U	0.0012	U	0.0014	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0018	U	0.0016	U	0.0016	U	0.0016	U	0.0015	U	0.0018	

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG																
			Location	SB12023		SB12024		SB18034											
			Sample Date	10/19/2023		10/19/2023		10/21/2023											
			Sample ID	LORNG_SB12023_00-02_10192023		LORNG_SB12024_00-02_10192023		LORNG_SB18034_00-01_10212023		LORNG_SB18034_06-08-10212023		LORNG_SB18034_06-08-10212023FD		LORNG_SB18034_13-15-10212023		LORNG_S00-01_10	
			QC Code	N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0002	U	0.00022	U	0.0002	U	0.0002	U	0.0002	U	0.00019	U	0.00022	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00037	U	0.00041	U	0.00037	U	0.00038	U	0.00038	U	0.00035	U	0.00041	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.000099	U	0.00011	U	0.000098	U	0.0001	U	0.0001	U	0.000095	U	0.00011	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.00022	U	0.0002	U	0.0002	U	0.0002	U	0.00019	U	0.00022	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0025	U	0.0027	U	0.0025	U	0.0025	U	0.0025	U	0.0024	U	0.0027	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00037	U	0.00041	U	0.00037	U	0.00038	U	0.00038	U	0.00035	U	0.00041	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00037	U	0.00041	U	0.00037	U	0.00038	U	0.00038	U	0.00035	U	0.00041	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00028	U	0.00031	U	0.00028	U	0.00029	U	0.00029	U	0.00027	U	0.00031	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0008	U	0.00089	U	0.0008	U	0.00082	U	0.00081	U	0.00077	U	0.00088	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0041	U	0.0045	U	0.004	U	0.0042	U	0.0041	U	0.0039	U	0.0045	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0041	U	0.0045	U	0.004	U	0.0042	U	0.0041	U	0.0039	U	0.0045	

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

				SDG	C3X5518											
				Location	SB18035		SB18036				SB18037					
				Sample Date	10/22/2023		10/22/2023				10/22/2023					
				Sample ID	B18035_222023		LORNG_SB18035_04-06_10222023		LORNG_SB18036_00-01_10222023		LORNG_SB18036_06-08_10222023		LORNG_SB18037_00-01-10212023		LORNG_SB18037_04-06_10222023		LORNG_SB18038_00-01-10212023	
				QC Code			N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**		Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG		U	0.0002	U	0.00024	U	0.00021	U	0.00029	U	0.0002	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG		U	0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluorohexanoic acid (PFHxA)	MG/KG		U	0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG		J	0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluorooctanoic acid (PFOA)	MG/KG		J	0.000099	U	0.000089	J	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluorononanoic acid (PFNA)	MG/KG		J	0.00012	U	0.00009	J	0.00013	U	0.00018	U	0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG		U	0.000099	U	0.000072	J	0.0001	U	0.00018	J	0.000098	U	0.000095	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG		U	0.000099	U	0.000054	J	0.0001	U	0.00026	J	0.000098	U	0.000095	U
		Perfluorododecanoic acid (PFDoA)	MG/KG		U	0.000099	U	0.000055	J	0.0001	U	0.00013	J	0.000098	U	0.000095	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG		U	0.000099	U	0.00012	U	0.0001	U	0.000082	J	0.000098	U	0.000095	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG		U	0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG		U	0.000088	U	0.0001	U	0.000092	U	0.00013	U	0.000087	U	0.000084	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG		U	0.000093	U	0.00011	U	0.000097	U	0.00014	U	0.000092	U	0.000089	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG		U	0.000091	U	0.00011	U	0.000095	U	0.00013	U	0.00009	U	0.000086	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG		U	0.00012	U	0.00014	U	0.00012	U	0.00018	U	0.00012	U	0.00011	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG			0.00051		0.001		0.000096	U	0.0011		0.000091	U	0.000087	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG		U	0.00012	U	0.00014	U	0.00012	U	0.00018	U	0.00012	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG		U	0.000096	U	0.00011	U	0.0001	U	0.00014	U	0.000095	U	0.000091	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG		U	0.00016	U	0.00019	U	0.00017	U	0.00024	U	0.00016	U	0.00015	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG		U	0.00037	U	0.00044	U	0.00039	U	0.00055	U	0.00037	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG		U	0.00037	U	0.00044	U	0.00039	U	0.00055	U	0.00037	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG		U	0.00039	U	0.00046	U	0.0004	U	0.00057	U	0.00038	U	0.00037	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG		U	0.00005	U	0.000059	U	0.000052	U	0.000074	U	0.000049	U	0.000047	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG		U	0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG		U	0.00005	U	0.000059	U	0.000052	U	0.000074	U	0.000049	U	0.000047	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG		U	0.00016	U	0.00019	U	0.00017	U	0.00024	U	0.00016	U	0.00015	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG		U	0.00016	U	0.00019	U	0.00017	U	0.00024	U	0.00016	U	0.00015	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG		U	0.0012	U	0.0015	U	0.0013	U	0.0018	U	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG		U	0.0016	U	0.0019	U	0.0017	U	0.0024	U	0.0016	U	0.0015	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X5518													
			Location	SB18035				SB18036				SB18037					
			Sample Date	10/22/2023				10/22/2023				10/22/2023					
			Sample ID	B18035_222023		LORNG_SB18035_04-06_10222023		LORNG_SB18036_00-01_10222023		LORNG_SB18036_06-08_10222023		LORNG_SB18037_00-01-10212023		LORNG_SB18037_04-06_10222023		LORNG_SB18038_00-01-10212023	
			QC Code			N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U		0.0002	U	0.00024	U	0.00021	U	0.00029	U	0.0002	U	0.00019	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U		0.00037	U	0.00044	U	0.00039	U	0.00055	U	0.00037	U	0.00035	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U		0.000099	U	0.00012	U	0.0001	U	0.00015	U	0.000098	U	0.000095	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U		0.0002	U	0.00024	U	0.00021	U	0.00029	U	0.0002	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U		0.0025	U	0.0029	U	0.0026	U	0.0037	U	0.0025	U	0.0024	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U		0.00037	U	0.00044	U	0.00039	U	0.00055	U	0.00037	U	0.00035	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U		0.00037	U	0.00044	U	0.00039	U	0.00055	U	0.00037	U	0.00035	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U		0.00029	U	0.00034	U	0.0003	U	0.00042	U	0.00028	U	0.00027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U		0.00081	U	0.00096	U	0.00084	U	0.0012	U	0.0008	U	0.00077	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U		0.0041	U	0.0049	U	0.0043	U	0.0061	U	0.0041	U	0.0039	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U		0.0041	U	0.0049	U	0.0043	U	0.0061	U	0.0041	U	0.0039	U

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Date: 3/8/24
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Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG				
			Location		SB18038		
			Sample Date		10/21/2023		
			Sample ID		LORNG_SB18038_00-01-10212023FD		LORNG_SB18038_05-07-10212023
			QC Code		FD		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00019	U	0.00019	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.000097	U	0.000093	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000097	U	0.000093	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000097	U	0.000093	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.000097	U	0.000093	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00012	U	0.00012	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.000097	U	0.000093	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.000097	U	0.000093	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.000097	U	0.000093	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000097	U	0.000093	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000097	U	0.000093	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000086	U	0.000082	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000091	U	0.000087	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.000089	U	0.000085	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00011	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00009	U	0.000086	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00011	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000093	U	0.000089	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00016	U	0.00015	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00036	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00036	U	0.00035	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00038	U	0.00036	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000049	U	0.000046	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.000097	U	0.000093	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000049	U	0.000046	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00016	U	0.00015	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00016	U	0.00015	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0012	U	0.0012	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0016	U	0.0015	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG				
			Location	SB18038			
			Sample Date	10/21/2023			
			Sample ID	LORNG_SB18038_00-01-10212023FD		LORNG_SB18038_05-07-10212023	
			QC Code	FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00019	U	0.00019	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00036	U	0.00035	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.000097	U	0.000093	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00019	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0024	U	0.0023	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00036	U	0.00035	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00036	U	0.00035	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00028	U	0.00027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00079	U	0.00075	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.004	U	0.0038	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.004	U	0.0038	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X5													
			Location	SB18039				SB18040				SB18050					
			Sample Date	10/21/2023				10/21/2023				10/19/2023					
			Sample ID	LORNG_SB18039_00-01-10212023		LORNG_SB18039_01-03-10212023		LORNG_SB18040_00-01-10212023		LORNG_SB18040_07-09-10212023		LORNG_SB18050_00-01_10192023		LORNG_SB18050_04-06_10192023		LORNG_S11-13_10	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00021	U	0.0002	U	0.00014	J	0.00021	U	0.00018	U	0.0002	U	0.00019	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00011	U	0.0001	U	0.000051	J	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00011	U	0.0001	U	0.000049	J	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorononanoic acid (PFNA)	MG/KG	0.00013	U	0.00012	U	0.000081	J	0.00013	U	0.00011	U	0.00012	U	0.00012	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00011	U	0.0001	U	0.000097	J	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00011	U	0.0001	U	0.0001	J	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00011	U	0.0001	U	0.000067	J	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000094	U	0.000089	U	0.00011	U	0.000091	U	0.00008	U	0.000087	U	0.000084	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000099	U	0.000094	U	0.00012	U	0.000096	U	0.000084	U	0.000092	U	0.000089	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.000097	U	0.000091	U	0.00011	U	0.000094	U	0.000082	U	0.00009	U	0.000087	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00013	U	0.00012	U	0.00015	U	0.00012	U	0.00011	U	0.00012	U	0.00011	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.000098	U	0.000092	U	0.00035		0.000095	U	0.000083	U	0.000091	U	0.000088	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00013	U	0.00012	U	0.00015	U	0.00012	U	0.00011	U	0.00012	U	0.00011	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0001	U	0.000096	U	0.00012	U	0.000099	U	0.000086	U	0.000095	U	0.000091	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00017	U	0.00016	U	0.0002	U	0.00017	U	0.00015	U	0.00016	U	0.00015	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0004	U	0.00037	U	0.00047	U	0.00038	U	0.00034	U	0.00037	U	0.00036	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0004	U	0.00037	U	0.00047	U	0.00038	U	0.00034	U	0.00037	U	0.00036	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00041	U	0.00039	U	0.00048	U	0.0004	U	0.00035	U	0.00038	U	0.00037	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.000053	U	0.00005	U	0.000063	U	0.000051	U	0.000045	U	0.000049	U	0.000047	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.000053	U	0.00005	U	0.000063	U	0.000051	U	0.000045	U	0.000049	U	0.000047	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00017	U	0.00016	U	0.0002	U	0.00017	U	0.00015	U	0.00016	U	0.00015	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00017	U	0.00016	U	0.0002	U	0.00017	U	0.00015	U	0.00016	U	0.00015	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0013	U	0.0012	U	0.0016	U	0.0013	U	0.0011	U	0.0012	U	0.0012	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0017	U	0.0016	U	0.002	U	0.0017	U	0.0015	U	0.0016	U	0.0015	

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X5													
			Location	SB18039				SB18040				SB18050					
			Sample Date	10/21/2023				10/21/2023				10/19/2023					
			Sample ID	LORNG_SB18039_00-01-10212023		LORNG_SB18039_01-03-10212023		LORNG_SB18040_00-01-10212023		LORNG_SB18040_07-09-10212023		LORNG_SB18050_00-01_10192023		LORNG_SB18050_04-06_10192023		LORNG_S11-13_10	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00021	U	0.0002	U	0.00025	U	0.00021	U	0.00018	U	0.0002	U	0.00019	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0004	U	0.00037	U	0.00047	U	0.00038	U	0.00034	U	0.00037	U	0.00036	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00011	U	0.0001	U	0.00013	U	0.0001	U	0.00009	U	0.000098	U	0.000095	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00021	U	0.0002	U	0.00025	U	0.00021	U	0.00018	U	0.0002	U	0.00019	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0026	U	0.0025	U	0.0031	U	0.0026	U	0.0022	U	0.0025	U	0.0024	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0004	U	0.00037	U	0.00047	U	0.00038	U	0.00034	U	0.00037	U	0.00036	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0004	U	0.00037	U	0.00047	U	0.00038	U	0.00034	U	0.00037	U	0.00036	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0003	U	0.00029	U	0.00036	U	0.0003	U	0.00026	U	0.00028	U	0.00027	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00086	U	0.00081	U	0.001	U	0.00083	U	0.00073	U	0.0008	U	0.00077	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0044	U	0.0041	U	0.0052	U	0.0042	U	0.0037	U	0.0041	U	0.0039	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0044	U	0.0041	U	0.0052	U	0.0042	U	0.0037	U	0.0041	U	0.0039	

Prepared by: AKN
Date: 3/8/24
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Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	518										
			Location		SB18051				SB20015				SB20016	
			Sample Date		10/19/2023				10/20/2023				10/20/2023	
			Sample ID	B18050_192023	LORNG_SB18051_00-01_10192023		LORNG_SB18051_03-05_10192023		LORNG_SB20015_00-01_10202023		LORNG_SB20015_04-06_10202023		LORNG_SB20016_00-01_10202023		LORNG_SB20016_02-04_10202023	
			QC Code		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	U	0.00019	U	0.00019	U	0.00022	J	0.00018	U	0.00019	J	0.00022	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	U	0.000095	U	0.000093	U	0.00015	J	0.000089	U	0.00032	J	0.000053	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	U	0.000027	J	0.000093	U	0.00033		0.000089	U	0.00041		0.00012	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	U	0.000095	U	0.000093	U	0.00015	J	0.000089	U	0.00012	J	0.00011	U
		Perfluorooctanoic acid (PFOA)	MG/KG	U	0.000095	U	0.000093	U	0.00032		0.000089	U	0.00029		0.00011	U
		Perfluorononanoic acid (PFNA)	MG/KG	U	0.00012	U	0.00012	U	0.00021	J	0.00011	U	0.00015	J	0.00014	U
		Perfluorodecanoic acid (PFDA)	MG/KG	U	0.000095	U	0.000093	U	0.000096	J	0.000089	U	0.0001	U	0.00011	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	U	0.000095	U	0.000093	U	0.00019	J	0.000089	U	0.0001	U	0.00011	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	U	0.000095	U	0.000093	U	0.000042	J	0.000089	U	0.0001	U	0.00011	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U	0.000095	U	0.000093	U	0.00011	U	0.000089	U	0.0001	U	0.00011	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U	0.000095	U	0.000093	U	0.00011	U	0.000089	U	0.0001	U	0.00011	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	U	0.000084	U	0.000082	U	0.000041	J	0.000079	U	0.000092	U	0.000097	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	U	0.000089	U	0.000087	U	0.000064	J	0.000083	U	0.000097	U	0.0001	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	U	0.000087	U	0.000085	U	0.0014		0.00031		0.00037		0.00014	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U	0.00011	U	0.00011	U	0.00013	J	0.00011	U	0.000094	J	0.00013	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	U	0.00027		0.00012	J	0.025		0.0032		0.013		0.0021	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U	0.00011	U	0.00011	U	0.00079		0.00011	U	0.00012	U	0.00013	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U	0.000092	U	0.000089	U	0.0016		0.000085	U	0.0001	U	0.00011	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U	0.00015	U	0.00015	U	0.00028		0.00014	U	0.00017	UJ	0.00018	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U	0.00036	U	0.00035	U	0.00039	U	0.00033	U	0.00039	U	0.00041	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	U	0.00036	U	0.00035	U	0.00039	U	0.00033	U	0.00039	U	0.00041	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	U	0.00037	U	0.00036	U	0.00041	U	0.00034	U	0.0004	U	0.00042	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U	0.000048	U	0.000046	U	0.00036		0.000044	U	0.000036	J	0.000055	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U	0.000095	U	0.000093	U	0.00011	U	0.000089	U	0.0001	U	0.00011	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U	0.000048	U	0.000046	U	0.000053	U	0.000044	U	0.000052	U	0.000055	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U	0.00015	U	0.00015	U	0.00017	U	0.00014	U	0.00017	U	0.00018	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U	0.00015	U	0.00015	U	0.00017	U	0.00014	U	0.00017	U	0.00018	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U	0.0012	U	0.0012	U	0.0013	U	0.0011	U	0.0013	U	0.0014	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	U	0.0015	U	0.0015	U	0.0017	U	0.0014	U	0.0017	U	0.0018	U

Prepared by: AKN
Date: 3/8/24
Checked by:
Date:

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

SDG				518											
Location					SB18051				SB20015				SB20016		
Sample Date					10/19/2023				10/20/2023				10/20/2023		
Sample ID				B18050_192023	LORNG_SB18051_00-01_10192023		LORNG_SB18051_03-05_10192023		LORNG_SB20015_00-01_10202023		LORNG_SB20015_04-06_10202023		LORNG_SB20016_00-01_10202023		LORNG_SB20016_02-04_10202023	
QC Code					N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.00019	U	0.00019	U	0.00021	U	0.00018	U	0.00021	U	0.00022	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.00036	U	0.00035	U	0.00039	U	0.00033	U	0.00039	U	0.00041	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.000095	U	0.000093	U	0.00011	U	0.000089	U	0.0001	U	0.00011	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.00019	U	0.00019	U	0.00021	U	0.00018	U	0.00021	U	0.00022	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.0024	U	0.0023	U	0.0026	U	0.0022	U	0.0026	U	0.0027	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.00036	U	0.00035	U	0.00039	U	0.00033	U	0.00039	U	0.00041	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.00036	U	0.00035	U	0.00039	U	0.00033	U	0.00039	U	0.00041	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.00027	U	0.00027	U	0.0003	U	0.00026	U	0.0003	U	0.00031	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.00077	U	0.00075	U	0.00085	U	0.00072	U	0.00084	U	0.00089	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.0039	U	0.0038	U	0.0043	U	0.0037	U	0.0043	U	0.0045	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.0039	U	0.0038	U	0.0043	U	0.0037	U	0.0043	U	0.0045	U

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X5518							
			Location	SB22012				SB22013			
			Sample Date	10/21/2023				10/21/2023			
			Sample ID	LORNG_SB22012_00-01_10212023		LORNG_SB22012_01-02_10212023		LORNG_SB22013_00-01_10212023		LORNG_SB22013_01-02_10212023	
			QC Code	N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00044	U	0.0004	U	0.00037	U	0.00039	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000069	J	0.00016	J	0.000085	J	0.00019	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00022	U	0.000072	J	0.00018	U	0.00019	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00019	J	0.00033	J	0.00016	J	0.00013	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.0002	J	0.00014	J	0.00023	U	0.00024	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00022	U	0.000087	J	0.00018	U	0.00019	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00022	U	0.000086	J	0.00018	U	0.00019	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0002	U	0.00018	U	0.00016	U	0.00017	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00021	U	0.00019	U	0.00017	U	0.00018	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00075		0.00075		0.001		0.00081	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00013	J	0.00024	U	0.00022	U	0.00023	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.017		0.0092		0.0035		0.0047	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00026	U	0.00024	U	0.00022	U	0.00023	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00021	U	0.00033	J	0.00018	U	0.00019	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00036	U	0.00032	U	0.0003	U	0.00031	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00083	U	0.00074	U	0.00069	U	0.00072	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00083	U	0.00074	U	0.00069	U	0.00072	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00085	U	0.0011	J	0.00071	U	0.00075	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00057	J+	0.0024	J+	0.000092	U	0.000096	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00011	U	0.000099	U	0.000092	U	0.000096	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00036	U	0.0011		0.0003	U	0.00031	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00036	U	0.00032	U	0.0003	U	0.00031	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0028	U	0.0025	U	0.0023	U	0.0024	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0036	U	0.0032	U	0.003	U	0.0031	U

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Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

			SDG	C3X5518							
			Location	SB22012				SB22013			
			Sample Date	10/21/2023				10/21/2023			
			Sample ID	LORNG_SB22012_00-01_10212023		LORNG_SB22012_01-02_10212023		LORNG_SB22013_00-01_10212023		LORNG_SB22013_01-02_10212023	
			QC Code	N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00044	U	0.0004	U	0.00037	U	0.00039	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00083	U	0.00074	U	0.00069	U	0.00072	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00022	U	0.0002	U	0.00018	U	0.00019	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00044	U	0.0004	U	0.00037	U	0.00039	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0055	U	0.005	U	0.0046	U	0.0048	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00083	U	0.00074	U	0.00069	U	0.00072	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00083	U	0.00074	U	0.00069	U	0.00072	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00063	U	0.00057	U	0.00053	U	0.00055	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0018	U	0.0016	U	0.0015	U	0.0016	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0091	U	0.0082	U	0.0076	U	0.008	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0091	U	0.0082	U	0.0076	U	0.008	U

Prepared by: AKN
Date: 3/8/24
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Date:

Table 3

Summary of Data Validation Actions

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5518	E1633DR	T	XKO416	LORNG_EB103_10182023	Perfluorooctane sulfonamide (PFOSA)	0.23	J	0.23	U	LBL	NG/L
			XKO342	LORNG_SB01030_00-01_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00044	U	0.00044	UJ	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.000053	J	0.000053	U	FBL/LCH	MG/KG
			XKO343	LORNG_SB01030_07-09_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00035	U	0.00035	UJ	CVHL	MG/KG
			XKO344	LORNG_SB01031_00-01_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00049	U	0.00049	UJ	CVHL	MG/KG
			XKO345	LORNG_SB01031_08-10_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00036	U	0.00036	UJ	CVHL	MG/KG
			XKO346	LORNG_SB01032_00-01_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00061	J	0.00061	J	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0013		0.0013	J+	FBL/LBL/LCH	MG/KG
			XKO348	LORNG_SB01033_00-01_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00042	U	0.00042	UJ	CVHL	MG/KG
			XKO349	LORNG_SB01034_00-01_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0015		0.0015	J	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.00042		0.00042	J+	FBL/LBL/LCH	MG/KG
			XKO417	LORNG_SB01034_08-10_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00016	U	0.00016	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0026		0.0026	J+	LBL/LCH	MG/KG
			XKO418	LORNG_SB01034_08-10_10182023FD	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00016	U	0.00016	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0027		0.0027	J+	LBL/LCH	MG/KG
			XKO419	LORNG_SB01035_00-01_10182023	Perfluorooctane sulfonamide (PFOSA)	0.00009	J	0.00009	U	FBL/LBL/LCH	MG/KG
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00017	U	0.00017	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0027		0.0027	J+	LBL/LCH	MG/KG
			XKO420	LORNG_SB01035_06-08_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00015	U	0.00015	UJ	CVHL	MG/KG

Prepared by:AKN
Date:3/27/24
Checked by:
Date:

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
C3X5518

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3X5518	E1633DR	T	XKO420	LORNG_SB01035_00-00_10182023	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0026		0.0026	J+	LBL/LCH	MG/KG
			XKO421	LORNG_SB01035_12-14_10182023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00038	U	0.00038	UJ	CVHL	MG/KG
			XKO422	LORNG_SB01036_00-01_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0004	U	0.0004	UJ	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.00013	J	0.00013	U	LBL/LCH	MG/KG
			XKO423	LORNG_SB01036_07-09_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00035	U	0.00035	UJ	CVHL	MG/KG
			XKO428	LORNG_SB01036_07-09_10192023FD	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00035	U	0.00035	UJ	CVHL	MG/KG
			XKO429	LORNG_SB01036_13-15_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0004	U	0.0004	UJ	CVHL	MG/KG
			XKO430	LORNG_SB01037_00-01_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.011		0.011	J	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0062		0.0062	J+	LBL/LCH	MG/KG
			XKO431	LORNG_SB01037_08-10_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00056	J	0.00056	J	CVHL	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.000031	J	0.000031	U	LBL/LCH	MG/KG
C3X5518	E1633DR	T	XKO350	LORNG_SB01038_00-02_10182023	Perfluorooctane sulfonamide (PFOSA)	0.000056	J	0.000056	U	FBL/LBL/LCH	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0026		0.0026	J+	LBL/LCH	MG/KG
			XKO351	LORNG_SB01039_00-02_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00018	U	0.00018	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0022	J	0.0022	U	LBL	MG/KG
			XKO432	LORNG_SB01040_00-01_10192023	Perfluorooctane sulfonamide (PFOSA)	0.00055		0.00055	J+	LBL/LCH	MG/KG
			XKO433	LORNG_SB01040_05-07_10192023	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.00034	U	0.00034	UJ	CVHL	MG/KG
			XKO434	LORNG_SB01040_11-13_10192023	Perfluorooctane sulfonamide (PFOSA)	0.00015	J	0.00015	J+	LCH	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.00017	J	0.00017	U	FBL/LBL/LCH	MG/KG

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Date:

Table 3
Chemist Review Summary Report
Loring PFAS RI
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			XKO352	LORNG_SB01041_00-02_10182023	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.00023	U	0.00023	UJ	MSD	MG/KG
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00037	U	0.00037	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0059		0.0059	J+	LCH	MG/KG
			XKO353	LORNG_SB01042_00-01_10182023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00019	U	0.00019	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0032		0.0032	J+	LBL/LCH	MG/KG
			XKO538	LORNG_SB05038_00-02_10202023	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00019	U	0.00019	UJ	CVHL	MG/KG
C3X5518	E1633DR	T	XKO541	LORNG_SB07027_06-08_10202023	Perfluoroheptanoic acid (PFHpA)	0.00038		0.00038	J	FDD	MG/KG
					Perfluorononanoic acid (PFNA)	0.00056		0.00056	J	FDD	MG/KG
					Perfluorohexanesulfonic acid (PFHxS)	0.033		0.033	J	FDD	MG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.0051		0.0051	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.066		0.066	J	FDD	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0019		0.0019	J	FDD	MG/KG
			XKO542	LORNG_SB07027_06-08_10202023FD	Perfluoroheptanoic acid (PFHpA)	0.00026		0.00026	J	FDD	MG/KG
					Perfluorononanoic acid (PFNA)	0.0003		0.0003	J	FDD	MG/KG
					Perfluorohexanesulfonic acid (PFHxS)	0.02		0.02	J	FDD	MG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.0029		0.0029	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.066		0.066	J	FDD	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.00039		0.00039	J	FDD	MG/KG
			XKO570	LORNG_SB07029_00-01_10212023	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.0013	J	0.0013	U	LBL	MG/KG
			XKO517	LORNG_SB12020_04-06_10192023	Perfluorohexanesulfonic acid (PFHxS)	0.00025		0.00025	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0021		0.0021	J	FDD	MG/KG
			XKO518	LORNG_SB12020_04-06_10192023FD	Perfluorohexanesulfonic acid (PFHxS)	0.00036		0.00036	J	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0036		0.0036	J	FDD	MG/KG

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Table 3
Chemist Review Summary Report
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			XKO597	LORNG_SB18034_06-08-10212023	Perfluorohexanesulfonic acid (PFHxS)	0.000092	U	0.000092	UJ	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.00023	J	0.00023	J	FDD	MG/KG
			XKO598	LORNG_SB18034_06-08-10212023FD	Perfluorohexanesulfonic acid (PFHxS)	0.000092	U	0.000092	UJ	FDD	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.00022	J	0.00022	J	FDD	MG/KG
			XKO547	LORNG_SB20016_00-01_10202023	Perfluorododecanesulfonic acid (PFDoS)	0.00017	U	0.00017	UJ	MSL	MG/KG
			XKO573	LORNG_SB22012_00-01_10212023	Perfluorooctane sulfonamide (PFOSA)	0.00057		0.00057	J+	FBL	MG/KG
			XKO574	LORNG_SB22012_01-02_10212023	Perfluorooctane sulfonamide (PFOSA)	0.0024		0.0024	J+	FBL	MG/KG

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Date:

Table 4

Field Duplicate RPD Summary

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5518
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3X5518	LORNG_SB01034_08-10_10182023	LORNG_SB01034_08-10_10182023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000086	U	0.000085	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000091	U	0.00009	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0001	J	0.000057	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00012	U	0.00011	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00054		0.00037		37	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000094	U	0.000093	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00016	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00037	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00037	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00038	U	0.00037	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000049	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.000097	U	0.000096	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000049	U	0.000048	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0012	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0026		0.0027		4	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00019	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00037	U	0.00036	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.000097	U	0.000096	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0024	U	0.0024	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00037	U	0.00036	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00037	U	0.00036	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00028	U	0.00028	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00079	U	0.00078	U	NC	

Table 4 - Field Duplicate RPD Summary

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.004	U	0.004	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.004	U	0.004	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	9.7		9.6		1	
C3X5518	LORNG_SB01036_07-09_10192023	LORNG_SB01036_07-09_10192023FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00018	U	0.00018	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000075	J	0.000085	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.000073	J	0.000067	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00008	U	0.00008	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000084	U	0.000084	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.000063	J	0.000072	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00017	J	0.000083	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00011	U	0.00011	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000087	U	0.000087	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00015	U	0.00015	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00034	U	0.00034	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00034	U	0.00034	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00035	U	0.00035	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000045	U	0.000045	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00009	U	0.00009	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000045	U	0.000045	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00015	U	0.00015	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00015	U	0.00015	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0011	U	0.0011	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0015	U	0.0015	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00018	U	0.00018	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00034	U	0.00034	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00009	U	0.00009	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00018	U	0.00018	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0022	U	0.0023	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00034	U	0.00034	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00034	U	0.00034	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00026	U	0.00026	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00073	U	0.00073	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0037	U	0.0037	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0037	U	0.0037	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	7.9		7.5		5	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.00016	J	0.00015	J	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00039	J	0.00035	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0008		0.00081		1	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00038		0.00026		38	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0068		0.0045		41	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00056		0.0003		60	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000037	J	0.000094	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000096	U	0.000094	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000096	U	0.000094	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000096	U	0.000094	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000096	U	0.000094	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00042		0.00036		15	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00095		0.00071		29	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.033		0.02		49	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0051		0.0029		55	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.066		0.066		0	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.000082	J	0.00011	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00014	J	0.00009	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00016	U	0.00015	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00036	U	0.00035	U	NC	
C3X5518	LORNG_SB07027_06-08_10202023	LORNG_SB07027_06-08_10202023FD	PFAS	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00046	J	0.00043	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00021	J	0.00036	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0019		0.00039		132	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.000096	U	0.000094	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000048	U	0.000047	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00016	U	0.00015	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00016	U	0.00015	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0012	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0016	U	0.0015	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00019	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00036	U	0.00035	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.000096	U	0.000094	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0024	U	0.0023	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00036	U	0.00035	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00036	U	0.00035	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00028	U	0.00027	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00078	U	0.00076	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.004	U	0.0039	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.004	U	0.0039	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	13		14		7	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.00021	U	0.0002	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0001	U	0.000074	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000049	J	0.000089	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0001	U	0.00005	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0001	U	0.0001	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00013	U	0.00013	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000091	U	0.000024	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000096	U	0.000038	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00025		0.00036		36	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0021		0.0036		53	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000099	U	0.000097	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00017	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
C3X5518	LORNG_SB12020_04-06_10192023	LORNG_SB12020_04-06_10192023FD	PFAS	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0004	U	0.00039	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000051	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0001	U	0.0001	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000051	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00017	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00017	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0013	U	0.0013	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0017	U	0.0016	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5518
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00021	U	0.0002	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00021	U	0.0002	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0026	U	0.0025	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00038	U	0.00038	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00029	U	0.00029	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00083	U	0.00082	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0042	U	0.0042	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0042	U	0.0042	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	14		15		7	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.0002	U	0.0002	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00013	U	0.00013	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000089	U	0.000089	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000094	U	0.000094	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.000092	U	0.000092	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00023	J	0.00022	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000097	U	0.000097	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00016	U	0.00016	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
C3X5518	LORNG_SB18034_06-08-10212023	LORNG_SB18034_06-08-10212023FD	PFAS	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00038	U	0.00038	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00039	U	0.00039	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00005	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0001	U	0.0001	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00005	U	0.00005	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5518
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00016	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0013	U	0.0013	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0016	U	0.0016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0002	U	0.0002	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0001	U	0.0001	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0002	U	0.0002	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0025	U	0.0025	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00038	U	0.00038	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00038	U	0.00038	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00029	U	0.00029	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00082	U	0.00081	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0042	U	0.0041	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0042	U	0.0041	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	13		13		0	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00012	U	0.00012	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000084	U	0.000086	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000089	U	0.000091	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.000086	U	0.000089	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.000087	U	0.00009	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00011	U	0.00012	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.000091	U	0.000093	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00015	U	0.00016	U	NC	
C3X5518	LORNG_SB18038_00-01-10212023	LORNG_SB18038_00-01-10212023FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00035	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00035	U	0.00036	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.00037	U	0.00038	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000047	U	0.000049	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
C3X5518
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.000095	U	0.000097	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.000047	U	0.000049	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00015	U	0.00016	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00015	U	0.00016	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0012	U	0.0012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0015	U	0.0016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00019	U	0.00019	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00035	U	0.00036	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.000095	U	0.000097	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00019	U	0.00019	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0024	U	0.0024	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00035	U	0.00036	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00035	U	0.00036	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00027	U	0.00028	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00077	U	0.00079	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0039	U	0.004	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0039	U	0.004	U	NC	
			WetChem	MOISTURE, PERCENT (PERCENT)	15		13		14	

Prepared by: AKN 2/2/24
Checked by:

Attachment B

Completed DV Checklist with Notes

WSP USA Environment & Infrastructure
USEPA STAGED VALIDATION CHECKLIST – STAGE 2B
PFAS – DoD QSM 5.4 Table B-24

Project Task:
Method: 1633 **Lab and SDG: C3X5518**
Date: 2/29.24 **Reviewer: R. Thielke**

☐ **USEPA Stage 2B**

NOTE: *Per QSM 5.4 Table B-24: In addition to the requirements specified in Table B-24, ALL OF THE REQUIREMENTS CONTAINED IN EPA DRAFT METHOD 1633 (CURRENT VERSION) MUST BE MET.*

X **1. Case Narrative and Data Package Completeness**
- COC review
- Requested compound list reported
- Detection Limits meet QAPP and PALs and correct analysis level was reported (low/standard level)
- Results between MDL and LOQ qualified estimated (J), NDs reported to LOD
- Confirm transition ions in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard Used for Quantification*" table in current draft Method 1633) were used for all analytes

X **2. Holding Time and Sample Preservation/Collection**
- Sample conditions upon receipt at laboratory
- Holding times met (See Section 8.5 Holding Times in Method 1633 for more information and exceptions re NFDHA):
- ----Aqueous samples 28 days to extraction if stored by lab at 0-6 degrees C and protected from light/90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Soil/Solid samples 90 days to extraction if stored by lab at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Tissue samples 90 days to extraction if stored at ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- ----Biosolids samples 90 days to extraction if stored at 0-6 degrees C or ≤20 degrees C and protected from light/90 days to analysis of extract if stored in the dark at ≤0 degrees C
- Collection, preparation, and analysis date verification

X **3. ☐ QC Blanks**
- Completeness and evaluation
- Method blanks (preparation) ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Instrument blanks ≤ ½ LOQ (or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater)
- Field QC blanks –See discussion in Module 6 Section 3.3.1
- For all blank qualification actions follow Module 6 Table III (below) and discussions in Module 6 Section 3.3.1 and 4.7, and use ≤2x blank concentration for qualifying result U if sample result is > LOD and ≤ LOQ—

Sample Result	Validated Result	Validation Qualifier
Non-detect or detect ≤LOD	Report at LOD	U
>LOQ but ≤5x blank	Report at sample result	J+
>LOQ and >5x blank	Report at sample result	None

Method blanks and equipment rinse blanks had detected results. See Report.

X **4.** **Instrument Tuning and Instrument Sensitivity Check (ISC)**

- Mass Calibration performed annually or as recommended by the instrument manufacturer, whichever is more frequent, per Method 1633 Section 10.1
- Mass Calibration Verification ± 0.2 amu per Method 1633 (not specified in Table B-24)
- Valid Mass Calibration Verification before ICAL and sample analysis
- ISC concentrations at LOQ and recoveries ±30%
- Valid ISC prior to sample analysis

X **5.** **Initial Calibration**

- Sequence Log and Preparation Log Review
- Quantitative/Qualitative Standard Review - Confirm analytes with branched isomers in the initial calibration standards are identified in the lab report and that areas of branched isomers area included in the calibration response areas for those analytes (See Method 1633 Sections 10.1.1 and 15.1.3).
- Confirm lowest standard concentration is ≤ the LOQ.
- %RSD RFs ≤ 20; linear $r^2 \geq 0.99$ (DoD QSM 5.4 B-24). If %RSD >30 use judgment to J or R.
- Calibration standards recovered 70-130% of true value
- ICV ±30%
- Instrument Blank Review

X **6.** **Continuing Calibration**

- Verify the CCV was analyzed every 10 samples in sequence.
- %D ±30%
- Use judgment to J or R for %D > 50
- Instrument Blank Review

CCV Results outside criteria. See Report

X **7.** **Laboratory Control Samples** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)

- Completeness and evaluation
- Percent Recoveries within criteria
- RPD ≤30 if LCSD reported
- Ion ratios within limit for all analytes

LCS outside criteria. See Report

X **8.** **Matrix Duplicate (Lab Duplicate) and Field Duplicate Precision**

- Completeness and evaluation
- Lab Duplicate RPD ≤ 30
- Field Duplicate use QAPP Limits or determine project limits

X **9.** **Matrix Spike Results** (DoD QSM 5.4 Table B-24 40-150% or lab limits if approved for project use)

- Completeness and evaluation
- Recovery within criteria and RPD ≤ 30

MS recoveries outside criteria. See Report

X **10.** **Ion Abundance Ratio (IAR)**

- As defined in Method 1633 4th Draft Section 14.3.5: AreaQ1/AreaQ2 where Q1 and Q2 are primary and secondary transition masses for detected compounds. Acceptance criteria are based on comparison with ion ratios established by the ICAL midpoint standard or daily CCV. If secondary transition masses are identified in Method 1633 4th Draft Table 9 (or "*Analyte Ions Monitored, Extracted Internal Standard, and Non-extracted Internal Standard*

Used for Quantification" table in current draft Method 1633), IAR must be within ±50% of IAR established for the ICAL midpoint standard or daily CCV per Section 15.1.3. Check ion ratios reported for LCS and samples.

X **11. □ Extracted Internal Standard (EIS)**

- Lab Recovery Limits B-24 (%R 20-150 vs ICAL midpoint or CCV)
- J for %R <20 and >200 (Module 6)
- R ND results if <10 and use judgment for detections
- RTs for samples and batch QC 0.40 minutes of CCV or initial calibration (if no CCV run)
- Analytes RT within +/- 0.1 minutes of their associated EIS

X **12. X Non-Extracted Internal Standard (NIS) Recovery (%R >30 vs ICAL midpoint or CCV)**

- DoD Module 6 criteria: J/UJ results if <30 or use professional judgment for R (Note: Method 1633 Section 14.9 specifies NIS recoveries within 50-200% vs CCV)
- RTs for samples 0.40 minutes of CCV or initial calibration (if no CCV run)

See report for CCV values that exceeded 30%

X **13. □ Bile Salt Standard Retention Time (RT) Check**

Did the laboratory analyze a bile salt standard? (required by Method 1633/QSM 5.4 B-24 for all sample matrices) YES NO (circle one)

Is the RT of the bile salt standard >1 minute from the RT window for PFOS (including linear and branched isomers)? YES NO (circle one)

NOTE: Three bile acids (TDCA, TCDCA, and TUDCA) have the same (<1 amu) primary transition masses as PFOS: m/z 498.9 ->79.9 for PFOS, and m/z 499.2 ->79.9 for the bile acids. As a result, the presence of these bile acids in samples can cause high bias to PFOS concentrations if co-eluting with PFOS. The bile salt standard must demonstrate chromatographic separation so there is no co-elution with any PFOS isomer.

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Stormwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, from September to October 2023 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to Bureau Veritas (BV) located in Mississauga, Ontario, Canada for analysis.

BV analyzed 48 samples for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021a).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations
- Table 6 – Interlaboratory Assessment Comparison Summary

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2023). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019b). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the Wood project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries,

instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2023), and method specifications in the DoD QSM 5.4 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.4 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

HHL = Sampling to extraction holding time exceeded
IAG = Ion abundance ratio outside calculated limits
RIS = Extracted internal standard recovery outside control limits

A duplicate of stormwater sample LORNG_C2_ST_10042023 was sampled and sent to SGS Laboratories (SGS) in Orlando, Florida as an interlaboratory comparison assessment sample. Results reported for LORNG_C2_ST_10042023 from SGS are included in this report in order to analyze the results of the interlaboratory comparison only and are not considered to be included in the final data set and are therefore not presented on Table 2. The interlaboratory comparison assessment summary is included in Table 6.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

Multiple parameters in several samples in SDGs C3U7087 and C3V6721 were extracted past the extraction holding time. Results for associated target compounds are considered estimated and data usability was not impacted.

One or more extracted internal standard (EIS) recoveries in a subset of samples recovered outside of the acceptance criteria of 20-200. Results for associated target compounds are considered estimated and data usability was not impacted.

One or more EIS recoveries in a subset of samples recovered outside of the rejection limit of 10. Reporting limits for associated target compounds are considered rejected and results are considered unusable for project objectives.

One or more transition ion ratios in multiple samples did not meet the acceptance criteria. Results for associated target compounds are considered estimated and data usability was not impacted.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.3, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD
* Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration

Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Interlaboratory Assessment Comparison
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

Multiple parameters in the following samples were extracted past the 28-day holding time for aqueous sample extraction. Associated results in the samples were qualified as estimated (UJ/J):

LORNG_ST16005_09282023	LORNG_ST08002_10102023
LORNG_ST13016_09282023	LORNG_ST11002_10102023
LORNG_ST05002_10102023	LORNG_ST11004_10102023
LORNG_ST05002_10102023FD	LORNG_ST18010_10052023
LORNG_ST07004_10102023	

2.1.2 Extracted Internal Standard Recovery

One or more EIS in the following samples recovered outside of the acceptance criteria of 20-200:

LORNG_C2_ST_10042023	LORNG_ST13014_10042023
LORNG_C3_ST_10052023	

One or more EIS in the following samples recovered below the rejection limit of 10:

LORNG_C1_ST_10042023	LORNG_ST13006_10042023
LORNG_C2_ST_10042023FD	LORNG_ST13017_10042023

2.1.3 Compound Identification and Quantitation

One or more transition ion ratios was outside of the acceptance criteria for one or more compounds for the following samples and the results were qualified as estimated (J):

LORNG_ST16002_09282023	LORNG_ST05002_10102023FD
LORNG_ST16005_09282023	LORNG_ST07006_10052023
LORNG_ST09006_09282023	LORNG_ST08002_10102023
LORNG_ST13006_10042023	LORNG_ST18010_10052023
LORNG_C1_ST_10042023	LORNG_ST20001_10102023
LORNG_ST05002_10102023	LORNG_ST18012_10132023

Reference:

WSP Environment & Infrastructure Solutions, Inc. (WSP), 2023. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; September 2023.

USDoD, 2021a. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

USDoD, 2019b. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November, 2019.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2023. Analysis of Per- and Polysluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples By LC-MS/MS; EPA 821-D-23-001. July, 2023.

Data Validation: Amber Jones



February 29, 2024

Reviewed by: Julie Ricardi



February 29, 2024

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
Fall 2023 Stormwater

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C3U7087	ST08001	LORNG_ST08001_09282023	XEM325	9/28/2023	WS	N	40
		LORNG_ST08001_09282023FD	XEM326	9/28/2023	WS	FD	40
	ST09006	LORNG_ST09006_09282023	XFE642	9/28/2023	WS	N	40
	ST11001	LORNG_ST11001_09282023	XEV226	9/28/2023	WS	N	40
	ST11003	LORNG_ST11003_09282023	XEM333	9/28/2023	WS	N	40
	ST12001	LORNG_ST12001_09252023	XEM327	9/25/2023	WS	N	40
	ST12002	LORNG_ST12002_09282023	XFE643	9/28/2023	WS	N	40
	ST12003	LORNG_ST12003_09282023	XEM334	9/28/2023	WS	N	40
	ST12004	LORNG_ST12004_09282023	XEM335	9/28/2023	WS	N	40
	ST12005	LORNG_ST12005_09282023	XEV227	9/28/2023	WS	N	40
	ST13016	LORNG_ST13016_09282023	XEM336	9/28/2023	WS	N	40
	ST16001	LORNG_ST16001_09282023	XEM328	9/28/2023	WS	N	40
	ST16002	LORNG_ST16002_09282023	XFE644	9/28/2023	WS	N	40
	ST16003	LORNG_ST16003_09282023	XEM329	9/28/2023	WS	N	40
	ST16004	LORNG_ST16004_09282023	XEM330	9/28/2023	WS	N	40
	ST16005	LORNG_ST16005_09282023	XEM331	9/28/2023	WS	N	40
	ST16006	LORNG_ST16006_09282023	XEM332	9/28/2023	WS	N	40
	ST18013	LORNG_ST18013_09282023	XFE645	9/28/2023	WS	N	40
	ST21002	LORNG_ST21002_09282023	XFE646	9/28/2023	WS	N	40
	ST21003	LORNG_ST21003_09282023	XFE647	9/28/2023	WS	N	40
	ST21004	LORNG_ST21004_09282023	XFE648	9/28/2023	WS	N	40
	ST21005	LORNG_ST21005_09282023	XEV228	9/28/2023	WS	N	40
C3V0422	C1	LORNG_C1_ST_10042023	XFD741	10/4/2023	WS	N	40
	C2	LORNG_C2_ST_10042023	XFD744	10/4/2023	WS	N	40
		LORNG_C2_ST_10042023FD	XFD745	10/4/2023	WS	FD	40
	C3	LORNG_C3_ST_10052023	XFD746	10/5/2023	WS	N	40
		LORNG_C3_ST_10052023FD	XFD747	10/5/2023	WS	FD	40
	ST07001	LORNG_ST07001_10052023	XFD748	10/5/2023	WS	N	40
	ST13006	LORNG_ST13006_10042023	XFD749	10/4/2023	WS	N	40
	ST13014	LORNG_ST13014_10042023	XFD750	10/4/2023	WS	N	40
	ST13017	LORNG_ST13017_10042023	XFD751	10/4/2023	WS	N	40
C3V6721	ST05002	LORNG_ST05002_10102023	XGO904	10/10/2023	WS	N	40
		LORNG_ST05002_10102023FD	XGO905	10/10/2023	WS	FD	40
	ST07002	LORNG_ST07002_10052023	XGO906	10/5/2023	WS	N	40
	ST07004	LORNG_ST07004_10102023	XGO907	10/10/2023	WS	N	40
	ST07005	LORNG_ST07005_10052023	XGO908	10/5/2023	WS	N	40
	ST07006	LORNG_ST07006_10052023	XGO909	10/5/2023	WS	N	40
	ST07007	LORNG_ST07007_10052023	XGO910	10/5/2023	WS	N	40
	ST08002	LORNG_ST08002_10102023	XGO911	10/10/2023	WS	N	40
	ST11002	LORNG_ST11002_10102023	XGO912	10/10/2023	WS	N	40
	ST11004	LORNG_ST11004_10102023	XGO913	10/10/2023	WS	N	40
	ST18010	LORNG_ST18010_10052023	XGO914	10/5/2023	WS	N	40
	ST20001	LORNG_ST20001_10102023	XGO915	10/10/2023	WS	N	40
		LORNG_ST20001_10102023FD	XGO916	10/10/2023	WS	FD	40
	ST20002	LORNG_ST20002_10102023	XGO917	10/10/2023	WS	N	40
		LORNG_ST20002_10102023FD	XGO918	10/10/2023	WS	FD	40
C3W2286	ST18011	LORNG_ST18011_10132023	XHU006	10/13/2023	WS	N	40
	ST18012	LORNG_ST18012_10132023	XHU007	10/13/2023	WS	N	40

Prepared by:AKN
Date:2/12/24
Checked by:TLC for JAR
Date: 8/22/25

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
Fall 2023 Stormwater

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/12/24
Checked by:TLC for JAR
Date: 8/22/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2023 Storm Sewer Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C3U7087																	
			Location	ST08001				ST09006		ST11001		ST11003		ST12001		ST12002		ST12003		ST12004	
			Sample Date	9/28/2023				9/28/2023		9/28/2023		9/28/2023		9/25/2023		9/28/2023		9/28/2023		9/28/2023	
			Sample ID	LORNG_ST08001_092820233		LORNG_ST08001_092820233FD		LORNG_ST09006_092820233		LORNG_ST11001_092820233		LORNG_ST11003_092820233		LORNG_ST12001_092520233		LORNG_ST12002_092820233		LORNG_ST12003_092820233		LORNG_ST12004_092820233	
			QC Code	N		FD		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	11		11		9.1		31	J	9.2		33	J	9.2		28		2.7	J
		Perfluoropentanoic acid (PFPeA)	NG/L	32		34		14		74		11		100		17		78		1.5	J
		Perfluorohexanoic acid (PFHxA)	NG/L	35		35		12		110		22		120		13		54		2.4	
		Perfluoroheptanoic acid (PFHpA)	NG/L	13		14		15		60		9.6		59		18		81		3.3	
		Perfluorooctanoic acid (PFOA)	NG/L	34		35		11		120		9.6		68		10		40		1.7	
		Perfluorononanoic acid (PFNA)	NG/L	1.7	J	1.6	J	2.3		15	J	0.78	J	7.2	J	1.4	J	3.4		0.53	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.55	U	0.55	U	0.5	U	5	U	0.55	U	5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.55	U	0.55	U	0.5	U	5	U	0.55	U	5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.7		6.2		1.9		30		14		28		1.6		2.8		0.72	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	7.7		7.8		2.2		36		20		36		2.1		3.3		1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	160		160		35		310		160		360		31		37		22	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2		2.1		0.94	J	29		4.7		25		0.61	J	1.3	J	0.3	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	92		94		35		5400		170		2600		32		57		11	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1	U	1	U	0.94	U	9.4	U	1	U	9.4	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.51	U	0.51	U	0.47	U	4.7	U	0.51	U	5.8	J	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	2.1	U	2.1	U	1.9	U	19	U	2.1	U	19	U	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	4.9	J	3.9	J	1.9	U	120		1.4	J	180		1.1	J	7.5		1.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.2	U	4.2	U	3.8	U	77		4.2	U	61	J	4.3	J	7.5		3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8		1.9		0.56	J	23		4.8		29		2.1		1	J	0.72	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1.1	U	1.1	U	1	U	10	U	1.1	U	10	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.7	U	2.7	U	2.5	U	25	U	2.7	U	25	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5.5	U	5.5	U	5	U	50	U	5.5	U	50	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4.4	U	4.4	U	4	U	40	U	4.4	U	40	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.2	U	4.2	U	3.8	U	38	U	4.2	U	38	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2	U	2.2	U	2	U	20	U	2.2	U	20	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.55	U	0.55	U	0.5	U	5	U	0.55	U	5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	66	U	66	U	60	U	600	U	66	U	600	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	7.2	U	7.2	U	6.6	U	66	U	7.2	U	66	U	6.6	U	6.6	U	6.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	7.2	U	7.2	U	6.6	U	66	U	7.2	U	66	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.4	U	3.4	U	3.1	U	31	U	3.4	U	31	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U	9.6	U	8.8	U	88	U	9.6	U	88	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	34	U	34	U	31	U	310	U	34	U	310	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	34	U	34	U	31	U	310	U	34	U	310	U	31	U	31	U	31	U

Prepared by: AKN
Date: 4/15/25
Checked by:TLC for JAR
Date:8/22/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2023 Storm Sewer Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C3U7087																	
			Location	ST12005		ST13016		ST16001		ST16002		ST16003		ST16004		ST16005		ST16006		ST18013		ST21002	
			Sample Date	9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023		9/28/2023	
			Sample ID	LORNG_ST12005_092820233		LORNG_ST13016_092820233		LORNG_ST16001_092820233		LORNG_ST16002_092820233		LORNG_ST16003_092820233		LORNG_ST16004_092820233		LORNG_ST16005_09282023		LORNG_ST16006_09282023		LORNG_ST18013_09282023		LORNG_ST21002_09282023	
			QC Code	N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	J	10		9.6		9.3		11		10		12		6.8		7.5		15	
		Perfluoropentanoic acid (PFPeA)	NG/L	3.2	J	13		13		12		16		16		26		5.1		11		27	
		Perfluorohexanoic acid (PFHxA)	NG/L	2.3		43		13		14		18		17		17		4.2		10		22	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.7		6.6		14		12		24		22		12		3.6		10		31	
		Perfluorooctanoic acid (PFOA)	NG/L	1.8		14		8.8		10		12		11		12		2.9		6.6		16	
		Perfluorononanoic acid (PFNA)	NG/L	0.34	J	0.99	J	1.5	J	1.4	J	2.4		2.1		2.5		1.1	J	1.2	J	2.4	
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	1	U	0.41	J	0.41	J	0.84	J	0.77	J	1	U	1	U	0.5	J	1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.19	J	0.26	J	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.1	J	4		2.3		2.7		1.6		1.6		4.2		1.3	J	3.8		2.2	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.66	J	4.6		3.4		3.7		2.5		2.3		5.3		1.3	J	6.8		3.1	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13		99		53		55		46		42		68		22		77		59	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	1.2	J	1.1	J	1.3	J	1	J	0.81	J	1.7		0.51	J	2.8		0.98	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	12		50		62		87		110		110		67		30		140		48	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	UJ	1.9	U	1.9	U	1.9	U	1.9	U	1.9	UJ	1.9	U	1.9	U	1.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.2	J	0.87	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	1.5	J	3.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.27	J	5.8		1.5	J	1.9	J	0.87	J	0.68	J	0.43	J	0.2	J	2.6		2	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	1.7	J	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	2.1	J	5	U	5	U	5	U	5	U	5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U	31	U

Prepared by: AKN
Date: 4/15/25
Checked by:TLC for JAR
Date:8/22/25

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Data Validation Report
Loring PFAS Remedial Investigation
2023 Storm Sewer Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		C3U7087																	
		Location		ST21003		ST21004		ST21005	C1		C2			C3			ST07001		ST13006		ST13014	
		Sample Date		9/28/2023		9/28/2023		9/28/2023	10/4/2023		10/4/2023			10/5/2023			10/5/2023		10/4/2023		10/4/2023	
		Sample ID		LORNG_ST21003_09282023		LORNG_ST21004_09282023		LORNG_ST21005_09282023	LORNG_C1_ST_10042023		LORNG_C2_ST_10042023		LORNG_C2_ST_10042023FD	LORNG_C3_ST_10052023		LORNG_C3_ST_10052023FD		LORNG_ST07001_10052023		LORNG_ST13006_10042023		LORNG_ST13014_10042023	
		QC Code		N		N		N	N		N		FD	N		FD		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result Qualifier		Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	15		12		8.2	7.6		7		7	24		24		46		12		8.3	
		Perfluoropentanoic acid (PFPeA)	NG/L	27		21		13	10		10		9.9	79		81		140		27		15	
		Perfluorohexanoic acid (PFHxA)	NG/L	21		17		10	8.6		8.6		8.5	86		89		160		19		11	
		Perfluoroheptanoic acid (PFHpA)	NG/L	28		25		15	6.6		6.3		6.5	40		40		98		20		11	
		Perfluorooctanoic acid (PFOA)	NG/L	14		12		8.2	6.2		6.6		6.5	87		88		140		12		8.3	
		Perfluorononanoic acid (PFNA)	NG/L	2		2.1		1.1 J	1.1 J		1.1 J		1.3 J	6.5		5.9		10		1.8		1.5 J	
		Perfluorodecanoic acid (PFDA)	NG/L	1 U		0.38 J		1 U	1 U		1 U		1 U	0.66 J		0.66 J		0.66 J		1 U		1 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1 U		1 U		1 U	1 U		1 U		1 U	1 U		1 U		1 U		1 U		1 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1 U		1 U		1 U	1 U		1 U		1 U	1 U		1 U		1 U		1 U		1 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2		2.1		1.3 J	1.8		2.2		1.9	15		15		18		2.4		1.7	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.8		2.4		1.8	2.2		2.1		2.1	21		23		32		3.9		2.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	49		46		30	28		27		28	310		300		680		42		33	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.94 J		0.94 J		0.64 J	0.7 J		0.68 J		0.66 J	8.8		8		15		0.96 J		0.9 J	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	46		58		25	37		35		45	540		510		620		44		53	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94 U		0.94 U		0.94 U	0.94 U		0.94 U		0.94 U	0.94 U		0.94 U		0.94 U		0.94 U		0.94 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47 U		0.47 U		0.47 U	0.47 U		0.47 U		0.47 U	0.47 U		0.47 U		0.47 U		0.47 U		0.47 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1 U		1 U		1 U	1 U		1 U		1 U	1 U		1 U		1 U		1 U		1 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9 U		1.9 U		1.9 U	1.9 U		1.9 U		1.9 U	2.1 J		2.1 J		2 J		1.9 U		1.9 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	0.91 J		1.9 U		1.9 U	1.3 J		1.5 J		1.5 J	100		120		110		6.5		2.5 J	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8 U		3.8 U		3.8 U	3.8 U		3.8 U		3.8 U	23		17		28		3.8 U		3.8 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9		1.8		0.87 J	0.18 J		0.21 J		0.27 J	12		12		30		0.22 J		0.2 J	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1 U		1 U		1 U	1 R		1 UJ		1 R	1 U		1 U		1 U		1 R		1 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1 U		1 U		1 U	1 R		1 UJ		1 R	1 UJ		1 U		1 U		1 R		1 UJ	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1 U		1 U		1 U	1 U		1 U		1 U	1 U		1 U		1 U		1 U		1 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1 U		1 U		1 U	1 U		1 U		1 U	1 U		1 U		1 U		1 U		1 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5 U		2.5 U		2.5 U	2.5 U		2.5 U		2.5 U	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5 U		5 U		5 U	5 U		5 U		5 U	5 U		5 U		5 U		5 U		5 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4 U		4 U		4 U	4 U		4 U		4 U	4 U		4 U		4 U		4 U		4 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U		3.8 U		3.8 U	3.8 U		3.8 U		3.8 U	3.8 U		3.8 U		3.8 U		3.8 U		3.8 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U		2 U		2 U	2 U		2 U		2 U	2 U		2 U		2 U		2 U		2 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60 U		60 U		60 U	60 U		60 U		60 U	60 U		60 U		60 U		60 U		60 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6 U		6.6 U		6.6 U	6.6 U		6.6 U		6.6 U	6.6 U		6.6 U		6.6 U		6.6 U		6.6 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6 U		6.6 U		6.6 U	6.6 U		6.6 U		6.6 U	6.6 U		6.6 U		6.6 U		6.6 U		6.6 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1 U		3.1 U		3.1 U	3.1 U		3.1 U		3.1 U	3.1 U		3.1 U		3.1 U		3.1 U		3.1 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8 U		8.8 U		8.8 U	8.8 U		8.8 U		8.8 U	8.8 U		8.8 U		8.8 U		8.8 U		8.8 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U		31 U		31 U	31 U		31 U		31 U	31 U		31 U		31 U		31 U		31 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U		31 U		31 U	31 U		31 U		31 U	31 U		31 U		31 U		31 U		31 U	

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Data Validation Report
Loring PFAS Remedial Investigation
2023 Storm Sewer Sampling Program
Former Loring Air Force Base, Limestone, Maine

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			SDG	C3V6721										C3W2286				FC10609		
			Location	ST18010		ST20001				ST20002				ST18011		ST18012		C2		
			Sample Date	10/5/2023		10/10/2023				10/10/2023				10/13/2023		10/13/2023		10/4/2023		
			Sample ID	LORNG_ST18010_10052023		LORNG_ST20001_10102023		LORNG_ST20001_10102023FD		LORNG_ST20002_10102023		LORNG_ST20002_10102023FD		LORNG_ST18011_10132023		LORNG_ST18012_10132023		LORNG_C2_ST_10042023SPLIT		
			QC Code	N		N		FD		N		FD		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.3	J	1.4	J	1.3	J	1.1	J	1.2	J	2.9	J	2	J	7.3	J	
		Perfluoropentanoic acid (PFPeA)	NG/L	0.56	J	1	J	1	J	0.5	U	0.5	U	2.5	J	0.27	J	10.4		
		Perfluorohexanoic acid (PFHxA)	NG/L	0.67	J	2		2		0.52	J	0.46	J	1.7		0.29	J	9.1		
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.69	J	0.74	J	0.72	J	0.54	J	0.57	J	1.7		0.36	J	6.3		
		Perfluorooctanoic acid (PFOA)	NG/L	0.94	J	1.4	J	1.2	J	0.55	J	0.54	J	1.6		0.34	J	6.5		
		Perfluorononanoic acid (PFNA)	NG/L	0.35	J	0.57	J	0.38	J	0.28	J	0.34	J	0.58	J	0.29	J	1.3	J	
		Perfluorodecanoic acid (PFDA)	NG/L	1	U	0.49	J	0.48	J	1	U	1	U	1	U	1	U	1.8	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.5	U	0.93	J	0.64	J	0.5	U	0.5	U	0.5	U	0.2	J	1.8	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1.8	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1.8	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.8	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.5	J	1.7		1.8		0.35	J	0.25	J	0.32	J	0.21	J	2	J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.43	J	2.5		2.5		0.47	U	0.47	U	0.47	U	0.47	U	2.7	J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	6		34		36		1.8		1.7		3.6		1.5	J	28.5		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.47	U	1.4	J	1.7		0.47	U	0.47	U	0.47	U	0.47	U	1	J	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	5.4		160		140		4		3.2		7		2.1		38.4		
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	1.8	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	1.8	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	3.7	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	7.3	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	7.3	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	7.3	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.4	J	0.39	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	1.8	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1	UJ	1	U	1	U	1	U	1	U	1	U	1	U	3.7	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1	UJ	1	U	1	U	1	U	1	U	1	U	1	U	3.7	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	3.7	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	3.7	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	18	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U	18	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	4	U	4	U	4	U	4	U	4	U	4	U	4	U	1.8	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.7	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	1.8	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	3.7	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	60	U	60	U	60	U	60	U	60	U	60	U	60	U	3.7	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	3.7	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	3.7	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	1.8	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	8.8	U	9.2	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	18	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	31	U	31	U	31	U	31	U	18	U	

Prepared by: AKN
Date: 4/15/25
Checked by:TLC for JAR
Date:8/22/25

Table 3
Validation Actions
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
Fall 2023 Stormwater

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorobutanoic acid (PFBA)	120		120	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorohexanoic acid (PFHxA)	270		270	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorooctanoic acid (PFOA)	190		190	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorononanoic acid (PFNA)	41		41	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorobutanesulfonic acid (PFBS)	31		31	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorohexanesulfonic acid (PFHxS)	840		840	J	HHL	NG/L
C3V6721	E1633DR	T	XGO904	LORNG_ST05002_10102023	Perfluorooctanesulfonic acid (PFOS)	1900		1900	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorobutanoic acid (PFBA)	120		120	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorohexanoic acid (PFHxA)	290		290	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorooctanoic acid (PFOA)	210		210	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorononanoic acid (PFNA)	45		45	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorobutanesulfonic acid (PFBS)	32		32	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorohexanesulfonic acid (PFHxS)	880		880	J	HHL	NG/L
C3V6721	E1633DR	T	XGO905	LORNG_ST05002_10102023FD	Perfluorooctanesulfonic acid (PFOS)	1800		1800	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorobutanoic acid (PFBA)	6.2	J	6.2	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorohexanoic acid (PFHxA)	4.1		4.1	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorooctanoic acid (PFOA)	9		9	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorobutanesulfonic acid (PFBS)	0.89	J	0.89	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorohexanesulfonic acid (PFHxS)	10		10	J	HHL	NG/L
C3V6721	E1633DR	T	XGO907	LORNG_ST07004_10102023	Perfluorooctanesulfonic acid (PFOS)	18		18	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorobutanoic acid (PFBA)	4.1	J	4.1	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorohexanoic acid (PFHxA)	2.8		2.8	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorooctanoic acid (PFOA)	5.1		5.1	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorononanoic acid (PFNA)	2		2	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorobutanesulfonic acid (PFBS)	2.2		2.2	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorohexanesulfonic acid (PFHxS)	61		61	J	HHL	NG/L
C3V6721	E1633DR	T	XGO911	LORNG_ST08002_10102023	Perfluorooctanesulfonic acid (PFOS)	360		360	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorobutanoic acid (PFBA)	1.6	J	1.6	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorohexanoic acid (PFHxA)	0.94	J	0.94	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorooctanoic acid (PFOA)	0.78	J	0.78	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorononanoic acid (PFNA)	0.24	J	0.24	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorobutanesulfonic acid (PFBS)	0.45	J	0.45	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorohexanesulfonic acid (PFHxS)	6.2		6.2	J	HHL	NG/L
C3V6721	E1633DR	T	XGO912	LORNG_ST11002_10102023	Perfluorooctanesulfonic acid (PFOS)	6.3		6.3	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorobutanoic acid (PFBA)	0.73	J	0.73	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorohexanoic acid (PFHxA)	0.65	J	0.65	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorooctanoic acid (PFOA)	0.89	J	0.89	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorononanoic acid (PFNA)	0.32	J	0.32	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorobutanesulfonic acid (PFBS)	0.78	J	0.78	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorohexanesulfonic acid (PFHxS)	26		26	J	HHL	NG/L
C3V6721	E1633DR	T	XGO913	LORNG_ST11004_10102023	Perfluorooctanesulfonic acid (PFOS)	8.8		8.8	J	HHL	NG/L
C3W2286	E1633DR	T	XHU007	LORNG_ST18012_10132023	Perfluorohexanoic acid (PFHxA)	0.29	J	0.29	J	IAG	NG/L

Prepared by:AKN
Date:2/12/24
Checked by:TC for HR
Date: 8/22/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C3U7087	LORNG_ST08001_09282023	LORNG_ST08001_09282023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	11		11		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	32		34		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	35		35		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	13		14		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	34		35		3	
				Perfluorononanoic acid (PFNA) (NG/L)	1.7	J	1.6	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.1	U	1.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.55	U	0.55	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.1	U	1.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.1	U	1.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.55	U	0.55	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5.7		6.2		8	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	7.7		7.8		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	160		160		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.2		2.1		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	92		94		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	U	1	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.51	U	0.51	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1.1	U	1.1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2.1	U	2.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	4.9	J	3.9	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	4.2	U	4.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8		1.9		5	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1.1	U	1.1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1.1	U	1.1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1.1	U	1.1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1.1	U	1.1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.7	U	2.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5.5	U	5.5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4.4	U	4.4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.2	U	4.2	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.55	U	0.55	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	66	U	66	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	7.2	U	7.2	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	7.2	U	7.2	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.4	U	3.4	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	9.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	34	U	34	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	34	U	34	U	NC	
C3V0422	LORNG_C2_ST_10042023	LORNG_C2_ST_10042023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	7		7		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	10		9.9		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.6		8.5		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.3		6.5		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.6		6.5		2	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.3	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.2		1.9		15	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.1		2.1		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	27		28		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.68	J	0.66	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	35		45		25	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.5	J	1.5	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.21	J	0.27	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	

Prepared by: AKN 2/12/24
Checked by: TLC for JAR 8/22/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	
C3V0422	LORNG_C3_ST_10052023	LORNG_C3_ST_10052023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	24		24		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	79		81		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	86		89		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	40		40		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	87		88		1	
				Perfluorononanoic acid (PFNA) (NG/L)	6.5		5.9		10	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.66	J	0.66	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	15		15		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	21		23		9	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	310		300		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	8.8		8		10	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	540		510		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	2.1	J	2.1	J	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	100		120		18	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	23		17		30	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	12		12		0	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	
C3V6721	LORNG_ST05002_10102023	LORNG_ST05002_10102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	120		120		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	410		420		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	270		290		7	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	370		390		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	190		210		10	
				Perfluorononanoic acid (PFNA) (NG/L)	41		45		9	
				Perfluorodecanoic acid (PFDA) (NG/L)	3.3	J	4.3	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	4.6	U	4.7	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	9.2	U	9.4	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	9.2	U	9.4	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	4.6	U	4.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	31		32		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	54		57		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	840		880		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	21		25		17	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1900		1800		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	8.6	U	8.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	4.3	U	4.4	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	9.2	U	9.4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	17	U	18	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	100		110		10	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	260		250		4	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	63		58		8	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	9.2	U	9.4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	9.2	U	9.4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	9.2	U	9.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	9.2	U	9.4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	23	U	23	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	46	U	47	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	37	U	38	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	35	U	36	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	18	U	19	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.6	U	4.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	550	U	560	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	60	U	62	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	60	U	62	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	28	U	29	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	81	U	83	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	280	U	290	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	280	U	290	U	NC	
C3V6721	LORNG_ST20001_10102023	LORNG_ST20001_10102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.4	J	1.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1	J	1	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2		2		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.74	J	0.72	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.4	J	1.2	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.57	J	0.38	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.49	J	0.48	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.93	J	0.64	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7		1.8		6	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.5		2.5		0	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	34		36		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.4	J	1.7		19	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	160		140		13	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.39	J	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	
C3V6721	LORNG_ST20002_10102023	LORNG_ST20002_10102023FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.1	J	1.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.52	J	0.46	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.54	J	0.57	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.55	J	0.54	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.28	J	0.34	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1	U	1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1	U	1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1	U	1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.5	U	0.5	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.35	J	0.25	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.8		1.7		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	4		3.2		22	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	0.47	U	0.47	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	1	U	1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	1.9	U	1.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.25	U	0.25	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1	U	1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1	U	1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	2.5	U	2.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	5	U	5	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	4	U	4	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	0.5	U	0.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	60	U	60	U	NC	

Prepared by: AKN 2/12/24
Checked by: TLC for JAR 8/22/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Fall 2023 Stormwater
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	6.6	U	6.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	6.6	U	6.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	3.1	U	3.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	8.8	U	8.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	31	U	31	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	31	U	31	U	NC	

Prepared by: AKN 2/12/24
Checked by: TLC for JAR 8/22/25

Data Validation Report
Loring PFAS Remedial Investigation
Additional Sample - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

One groundwater sample was collected at the Former Loring Air Force Base in Limestone, Maine, in December 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. The location was sampled after the main sampling event due to delayed access. The sample was submitted to SGS North America (SGS) located in Orlando, Florida, for analysis.

SGS analyzed one sample and one equipment blank for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2B data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or

the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

LCL = Laboratory control sample recovery less than lower control limit

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
  LCS
* MS/MSD (not applicable)
* Field Duplicates (not applicable)

* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 LCS

The reporting limit for N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) in sample LORNG_GB_BW002_12272024 was qualified estimated (UJ) with reason code LCL based on low recovery in the associated LCS. Percent recovery of NEtFOSAA in the LCS was 66 with control limits 70-145.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2024. "Draft Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Draft Rev 1, Former Loring Air Force Base, Limestone, Maine; April 2024.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories"; Version 5.4; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

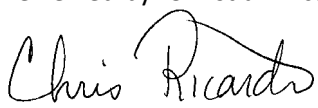
USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Julie Ricardi



February 4, 2025

Reviewed by: Christian Ricardi, NRCC-EAC



February 7, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
Additional Sample - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC21545	FIELDQC	LORNG_EB051_12272024	FC21545-1	12/27/2024	WQ	EB	40
	GB_BW002	LORNG_GB_BW002_12272024	FC21545-2	12/27/2024	WG	N	40

Notes:

N = Normal Field Sample, EB = Equipment Blank

WG = Groundwater; WQ = Water Quality Control

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/30/25
Checked by: JAR
Date: 2/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Additional Sample - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC21545			
			Location	FIELDQC		GB_BW002	
			Sample Date	12/27/2024		12/27/2024	
			Sample ID	LORNG_EB051_12272024		LORNG_GB_BW002_12272024	
			QC Code	EB		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	4.1	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	1	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	4.1	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.3	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	4.1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	8.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	8.2	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	8.2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	4.1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	4.1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	4.1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	4.1	UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	4.1	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	4.1	U

Prepared by: AKN
Date: 2/3/25
Checked by: JAR
Date: 2/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Additional Sample - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC21545			
		Location		FIELDQC		GB_BW002	
		Sample Date		12/27/2024		12/27/2024	
		Sample ID		LORNG_EB051_12272024		LORNG_GB_BW002_12272024	
		QC Code		EB		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	4.1	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	4.1	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	4.1	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	20	U

Notes:

N = Normal Field Sample

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 2/3/25
Checked by: JAR
Date: 2/4/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Additional Sampel - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC21545	E1633	T	FC21545-2	LORNG_GB_BW002_12272024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.1	U	4.1	UJ	LCL	NG/L

Notes:

U = Analyte not detected

UJ = Analyte not detected; reporting limits estimated

NG/L = Nanogram per liter

Reason Codes:

LCL = Laboratory control sample recovery less than lower control limit

Prepared by:AKN
Date:2/3/25
Checked by: JAR
Date: 2/4/25

Table 4 - Acronyms and Abbreviations

Data Validation Report
Loring PFAS Remedial Investigation
Additional Sample - Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Residential water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in December 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America (SGS) located in Orlando, Florida, for analysis.

SGS analyzed 21 samples for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Summary of Field Duplicate Results
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 4 data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs, as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

HPHL = Sampling to extraction holding time exceeded

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
  Holding Times
* QC Blanks
* Instrument Performance/Tuning

* LCS
* MS/MSD
* Field Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Holding Times

Sample LORNG_RES09_12042024 was initially extracted within the extraction holding time of 28 days. Recoveries of extracted internal standards (EIS) in the initial extraction were outside control limits and ranged from 1 to 5 percent. The sample was re-extracted one day after expiration of the holding time and EIS recoveries for all compounds were within control limits and ranged from 96 to 145 percent. Results from the re-extraction of sample LORNG_RES09_12042024 were selected for final reporting and all results for this sample were qualified estimated (J/UJ) with reason code HPHL.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2024. "Draft Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Draft Rev 1, Former Loring Air Force Base, Limestone, Maine; April 2024.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories"; Version 5.4; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Julie Ricardi

Julie Ricardi

January 30, 2025

Reviewed by: Christian Ricardi, NRCC-EAC

Chris Ricardi

February 7, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
FC21056	ANWR01	LORNG_ANWR-01_12032024	FC21056-8	12/3/2024	WP	N	40
	PWKR	LORNG_PWKR_12042024	FC21056-16	12/4/2024	WP	N	40
	RES01	LORNG_RES01_12042024	FC21056-1	12/4/2024	WP	N	40
	RES03	LORNG_RES03_12042024	FC21056-17	12/4/2024	WP	N	40
		LORNG_RES03_12042024FD	FC21056-2	12/4/2024	WP	FD	40
	RES05	LORNG_RES05_12032024	FC21056-9	12/3/2024	WP	N	40
	RES08	LORNG_RES08_12042024	FC21056-18	12/4/2024	WP	N	40
	RES09	LORNG_RES09_12042024	FC21056-19	12/4/2024	WP	N	40
	RES10	LORNG_RES10_12042024	FC21056-10	12/4/2024	WP	N	40
	RES14	LORNG_RES14_12042024	FC21056-3	12/4/2024	WP	N	40
		LORNG_RES14_12042024FD	FC21056-4	12/4/2024	WP	FD	40
	RES15	LORNG_RES15_12042024	FC21056-5	12/4/2024	WP	N	40
	RES39	LORNG_RES39_12032024	FC21056-11	12/3/2024	WP	N	40
	RES41	LORNG_RES41_12032024	FC21056-12	12/3/2024	WP	N	40
	RES42	LORNG_RES42_12032024	FC21056-13	12/3/2024	WP	N	40
	RES44	LORNG_RES44_12042024	FC21056-20	12/4/2024	WP	N	40
	RES45	LORNG_RES45_12042024	FC21056-6	12/4/2024	WP	N	40
	RES46	LORNG_RES46_12042024	FC21056-14	12/4/2024	WP	N	40
	RES48	LORNG_RES48_12042024	FC21056-7	12/4/2024	WP	N	40
	RES50	LORNG_RES50_12042024	FC21056-21	12/4/2024	WP	N	40
	USFW01	LORNG_USFW-01_12032024	FC21056-15	12/3/2024	WP	N	40

Notes:

N = Normal Field Sample, FD = Field Duplicate

WP = Potable Water

All samples subjected to Stage 4 validation

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC21056																
			Location	ANWR01		PWKR		RES01		RES03				RES05		RES08		RES09		RES10	
			Sample Date	12/3/2024		12/4/2024		12/4/2024		12/4/2024				12/3/2024		12/4/2024		12/4/2024		12/4/2024	
			Sample ID	LORNG_ANWR-01_12032024		LORNG_PWKR_120420 24		LORNG_RES01_120420 24		LORNG_RES03_120420 24		LORNG_RES03_120420 24FD		LORNG_RES05_120320 24		LORNG_RES08_120420 24		LORNG_RES09_120420 24		LORNG_RES10_120 42024	
			QC Code	N		N		N		N		FD		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	3.8	J	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	2.9	J	0.87	J	1.9	U	1.9	U	2.9	U	0.45	J	0.58	J	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.6	J	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	3.1	J	1.7	J	0.93	U	0.94	U	0.74	J	0.91	U	0.79	J	0.96	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.7	J	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	0.79	J	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.5	J	2	J	4.5	J	1.9	U	1.9	U	6.4		1.8	U	2.9	J	1.8	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4.4		4.2	J	5.3		0.61	J	1.9	U	5	J	1.8	J	7.1	J	3.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	11	U	9.6	U	7.5	U	7.5	U	11	U	7.3	U	7.8	UJ	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	11	U	9.6	U	7.5	U	7.5	U	11	U	7.3	U	7.8	UJ	7.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	11	U	9.6	U	7.5	U	7.5	U	11	U	7.3	U	7.8	UJ	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.2	J	2.9	U	1.8	U	1.9	UJ	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	26	U	24	U	19	U	19	U	29	U	18	U	19	UJ	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	26	U	24	U	19	U	19	U	29	U	18	U	19	UJ	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U

Prepared by: AKN
Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC21056																
			Location	ANWR01		PWKR		RES01		RES03				RES05		RES08		RES09		RES10	
			Sample Date	12/3/2024		12/4/2024		12/4/2024		12/4/2024				12/3/2024		12/4/2024		12/4/2024		12/4/2024	
			Sample ID	LORNG_ANWR-01_12032024		LORNG_PWKR_120420 24		LORNG_RES01_120420 24		LORNG_RES03_120420 24		LORNG_RES03_120420 24FD		LORNG_RES05_120320 24		LORNG_RES08_120420 24		LORNG_RES09_12042 024		LORNG_RES10_120 42024	
			QC Code	N		N		N		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	5.3	U	4.8	U	3.7	U	3.8	U	5.7	U	3.6	U	3.9	UJ	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2.6	U	2.4	U	1.9	U	1.9	U	2.9	U	1.8	U	1.9	UJ	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	13	U	12	U	9.3	U	9.4	U	14	U	9.1	U	9.7	UJ	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	26	U	24	U	19	U	19	U	29	U	18	U	19	UJ	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	26	U	24	U	19	U	19	U	29	U	18	U	19	UJ	19	U

Notes:

N = Normal Field Sample, FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG						FC21056													
Location				RES14		RES15		RES39		RES41		RES42		RES44		RES45		RES46	
Sample Date				12/4/2024		12/4/2024		12/3/2024		12/3/2024		12/3/2024		12/4/2024		12/4/2024		12/4/2024	
Sample ID				LORNG_RES14_12042024	LORNG_RES14_12042024FD	LORNG_RES15_12042024		LORNG_RES39_12032024		LORNG_RES41_12032024		LORNG_RES42_12032024		LORNG_RES44_12042024		LORNG_RES45_12042024		LORNG_RES46_12042024	
QC Code				N	FD	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.93	J	1.0	J	2.1	U	1.9	U	1.8	U	3.3	J	1.4	J	1.9	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.73	J	0.64	J	2.1	U	0.78	J	1.5	J	1.2	J	0.93	J	0.58	J	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	2.1	U	0.53	J	1.8	U	0.68	J	0.76	J	1.9	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.96	J	0.91	J	1.1	U	1.3	J	0.51	J	1.7	J	1.1	J	0.63	J	0.53	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.71	J	0.87	J	2.1	U	0.53	J	1.8	U	0.98	J	0.65	J	1.9	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.4	J	1.6	J	2.1	U	1.6	J	1.8	J	1.9	J	1.1	J	1.6	J	0.81	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4.4		4.8		1.1	J	11.7		9.5		3.1	J	4.3		2.2	J	2.3	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.8	U	8.4	U	7.6	U	7.3	U	9.8	U	7.8	U	7.4	U	7.6	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.8	U	8.4	U	5.9	J	4.2	J	9.8	U	7.8	U	7.4	U	7.6	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.8	U	8.4	U	7.6	U	7.3	U	9.8	U	7.8	U	7.4	U	7.6	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	21	U	19	U	18	U	24	U	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	21	U	19	U	18	U	24	U	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U

Prepared by: AKN
Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG							FC21056														
Location				RES14			RES15		RES39		RES41		RES42		RES44		RES45		RES46		
Sample Date				12/4/2024			12/4/2024		12/3/2024		12/3/2024		12/3/2024		12/4/2024		12/4/2024		12/4/2024		
Sample ID				LORNG_RES14_12042024		LORNG_RES14_12042024FD	LORNG_RES15_12042024		LORNG_RES39_12032024		LORNG_RES41_12032024		LORNG_RES42_12032024		LORNG_RES44_12042024		LORNG_RES45_12042024		LORNG_RES46_12042024		
QC Code				N		FD	N		N		N		N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.9	U	4.2	U	3.8	U	3.6	U	4.9	U	3.9	U	3.7	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	2.1	U	1.9	U	1.8	U	2.4	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.7	U	11	U	9.5	U	9.1	U	12	U	9.7	U	9.3	U	9.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	21	U	19	U	18	U	24	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	21	U	19	U	18	U	24	U	19	U	19	U	19	U

Notes:

N = Normal Field Sample, FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG					
			Location	RES48		RES50	USFW01	
			Sample Date	12/4/2024		12/4/2024	12/3/2024	
			Sample ID	LORNG_RES48_12042024		LORNG_RES50_12042024	LORNG_USFW-01_12032024	
			QC Code	N		N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	3.8 U	3.6	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.55	J	0.55 J	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.71	J	0.53 J	0.9	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	3.8 U	3.6	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	5		1.9 U	6.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2	J	1.7 J	8.2	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.8 U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.6	U	7.7 U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.6	U	7.7 U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.6	U	7.7 U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9 U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.8 U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.8 U	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.8 U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.8 U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19 U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19 U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9 U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8 U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9 U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8 U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8 U	3.6	U

Prepared by: AKN
Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG						
			Location	RES48		RES50		USFW01	
			Sample Date	12/4/2024		12/4/2024		12/3/2024	
			Sample ID	LORNG_RES48_12042024		LORNG_RES50_12042024		LORNG_USFW-01_12032024	
			QC Code	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U	3.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.5	U	9.6	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	18	U

Notes:

N = Normal Field Sample, FD = Field Duplicate

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Date: 1/30/25
Checked by: JAR
Date: 1/30/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC21056	E1633DR	T	FC21056-19	LORNG_RES09_12042024	Perfluorobutanoic acid (PFBA)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	0.58	J	0.58	J	HPHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorooctanoic acid (PFOA)	0.79	J	0.79	J	HPHL	NG/L
					Perfluorononanoic acid (PFNA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.79	J	0.79	J	HPHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.9	J	2.9	J	HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	7.1	=	7.1	J	HPHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	3.9	U	3.9	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	7.8	U	7.8	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.8	U	7.8	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.8	U	7.8	UJ	HPHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	HPHL	NG/L

Prepared by:AKN
Date:1/30/25
Checked by: JAR
Date: 1/30/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC21056	E1633DR	T	FC21056-19	LORNG_RES09_12042024	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.9	U	3.9	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.9	U	3.9	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	HPHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.9	U	1.9	UJ	HPHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.9	U	3.9	UJ	HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.9	U	3.9	UJ	HPHL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	3.9	U	3.9	UJ	HPHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	3.9	U	3.9	UJ	HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.9	U	1.9	UJ	HPHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.7	U	9.7	UJ	HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	19	U	19	UJ	HPHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	U	19	UJ	HPHL	NG/L

Notes:

J = Analyte is estimated

UJ = Analyte not detected; reporting limits estimated

NG/L = Nanogram per liter

Reason Codes:

HPHL = Sampling to extraction holding time exceeded

Prepared by:AKN
Date:1/30/25
Checked by: JAR
Date: 1/30/25

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC21056	LORNG_RES03_12042024	LORNG_RES03_12042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.93	U	0.94	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.8	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	0.61	J	1.9	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.2	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC21056	LORNG_RES14_12042024	LORNG_RES14_12042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	0.93	J	0.97	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.73	J	0.61	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.96	J	0.86	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.71	J	0.82	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.4	J	1.5	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	4.4		4.5		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.2	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	

Notes:
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
NC = not calculated < LOQ
NG/L = nanogram per liter
RPD = relative percent difference
SDG = Sample Delivery Group

Table 5 - Acronyms and Abbreviations

Data Validation Report
Loring PFAS Remedial Investigation
December 2024 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

Stage I - DATA VERIFICATION CHECKLIST

Project Name: Loring AFB – Fall 2024 LEAF sampling program **Project Number:** US-EI-775361701
Reviewing Company: WSP USA Environment & Infrastructure Inc **Project Manager:** Scott Calkin
Data Evaluator: Tige Cunningham **Data Evaluation Date:**3/17/2025
Laboratory: SGS (PFAS), Eurofins (LEAF analysis)

Lab Job #: FC20059, FC20061, FC20143, FC20145, FC20336, FC20337, 180-181004-1, 180-181034-1

Matrix: ☒ Aqueous ☒ Soil ☐ Sediment ☐ Waste ☐ Air ☐ Other:

A Stage 1 review was completed on the aqueous PFAS LEAF fraction data for soil samples collected in October and November 2024 at the Loring AFB Site. Soil samples were shipped from Loring AFB to Eurofins in Pittsburgh, PA. Eurofins performed the LEAF extraction on the soil samples and shipped the aqueous fractions to SGS Noth America Labs in Orlando, FL for PFAS analysis by USEPA Method 1633. The Stage 1 review was performed of the aqueous PFAS data and general chemistry parameters on the soil samples (ORP, pH, and specific conductance) following the US DoD Draft General Data Validation Guidelines (November 2019 Rev1) as presented in the TO 1048 Quality Program Plan Rev 1, April 2024. Stage 1 review is described below.

Stage 1: A verification and validation conducted only on completeness and compliance of sample specific information and field QC: field sample IDs and target analytes verified against the chain of custody for completeness; sample conditions upon arrival at laboratory noted; sample preservation was appropriate and verified by the laboratory; holding times were met; concentrations and units for limits of detection and quantitation were appropriate; trip blanks, field blanks, equipment blanks, and field duplicates met project requirements for frequency and field quality control.

Analytical Methods: See Table 1.

Sample Information: See Table 1.

Data Qualification: No qualifications required. Table 2 has final results. Table 3 presents qualified results.

Work Plan or QAPP reference: TO 1048 Quality Program Plan Rev 1, April 2024

Data Validation Guidance: DoD QSM 5.4 Quality Control Limits and Laboratory Quality Control Limits

Chain of Custody (COC) and Sample Receipt	YES	NO	NA	COMMENT
a) COC complete and correct? (Project location, contacts, sample IDs, sample dates, field QC samples, analyses identified, et c.)	☒	☐		
b) COC documents release of custody (signed and dated)?	☒	☐		
c) Field QC types provided (note types)?	☐	☐	☒	No Field QC samples collected. OK
d) Did the cooler contents match the COC?	☒	☐		
e) Were samples received in good condition?	☒	☐		
f) Were cooler temperatures within control limits?	☒	☐		

Data Package Information	YES	NO	NA	COMMENT
a) Laboratory name and location documented?	☒	☐		
b) All samples on COC reported in data package?	☒	☐		
c) Requested analytical methods used?	☒	☐		
d) Requested analyte list reported?	☒	☐		

Data Package Information	YES	NO	NA	COMMENT
e) Requested units reported?	☒	☐	☐	
f) Did the laboratory define the qualifiers used?	☒	☐		
g) Data package contains all information necessary to complete the data quality review?	☒	☐		PFOS was missing for sample LORNG_SB01055_0-2_100124 T5 in SDG FC20143. SGS was contacted and data package was re-issued to report the missing PFOS result. Andrew Nelson entered the result into ERPIMS, no revised EDD was submitted from SGS.

Analytical Assessment	YES	NO	NA	COMMENT
a) Solid samples reported on a dry-weight basis?	☐	☐	☒	
b) Were solid samples percent moisture criteria acceptable?	☒	☐	☐	
c) Were sample dilutions noted?	☒	☐		
d) Were detected concentrations less than the QL qualified by the laboratory?	☒	☐		
e) All detected sample results within the calibrated range?	☒	☐		
f) Did the laboratory satisfy the requested sensitivity requirements?	☒	☐		

Laboratory Case Narrative	YES	NO	NA	COMMENT
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	☒	☐	☐	See Notes

Sample Preservation and Holding Time	YES	NO	NA	COMMENT
a) Were samples properly preserved?	☒	☐		
b) Were holding times met for sample preparation and/or extraction?	☐	☒	☐	See Notes
c) Were holding times met for sample analysis?	☒	☐		

Blanks	YES	NO	NA	COMMENTS
a) Are any analytes detected in the associated preparation/method blank(s)?	☒	☐	☒	Not effecting results.
b) Are any analytes detected in the associated trip blank(s)?	☐	☐	☒	
c) Are any analytes detected in the associated field or equipment/rinsate blank(s)?	☐	☐	☒	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates reported?	☐	☒	☐	No FDs
b) Was field duplicate RPD or absolute difference criteria acceptable?	☐	☐	☒	Not Evaluated

Overall Evaluation	YES	NO	NA	COMMENTS
a) Any other technical problems that lead to data rejection identified by laboratory?	☐	☒		
b) Were data acceptable and usable, except where noted?	☒	☐		

Comments/Notes:

1) Case Narrative review:

Hold Times (28 days to extraction/analysis):

- SDG: FC20059: Sample LORNG_SB07036_0-2_093024 T1. Re-extracted 5 days out of out of hold time due to low EIS in original run. The following analytes re-ported from the extraction out of hold: Perfluorotetradecanoic acid, MeFOSE, EtFOSE. Results were ND for these compounds and qualified UJ.

  Reason Code: HPHL = HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED

  See attached Table 3

- SDG: FC20143: The following sub-set of samples were re-extracted out of hold time due to recoveries of extracted internal standards out of control criteria in the initial extraction. A subset of compounds were reported from the original run within hold time and a subset were report from the re-extracted samples out of hold. Compounds reported from the extraction out of hold time were qualified estimated (J/UJ): **LORNG_SB01055_0-2_100124 T5 and LORNG_SB01055_0-2_100124 T7**

  Reason Code: HPHL = HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED

  See attached Table 3

Blanks

- **SDG FC20145 = Instrument Blank had EtFOSA 0.0013 ug/l and 0.0010 ug/l. No data qualified.**
- **SDG FC20336 = Instrument Blank had EtFOSA 0.0013 ug/l and 0.0010 ug/l. No data qualified.**
- **SDG FC20337 = Instrument Blank had Perfluorooctanesulfonic acid 0.00086 ug/l. No data qualified.**

Table 1
Stage 1 Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 LEAF Sampling Program

						Method Class	PFAS	WetChem			
						Analysis Method	E1633DR	A2510B	A2580B	D2216	SW9040C
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
180-181004-1	SB01055	LORNG_SB01055_0-2_100124 T1P	180-181004-1	10/1/2024	LA	N		1	1	2	1
		LORNG_SB01055_0-2_100124 T2P	180-181004-2	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T3P	180-181004-3	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T4P	180-181004-4	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T5P	180-181004-5	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T6P	180-181004-6	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T7P	180-181004-7	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T8P	180-181004-8	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_0-2_100124 T9P	180-181004-9	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T1P	180-181004-10	10/1/2024	LA	N		1	1	2	1
		LORNG_SB01055_13-15_100124 T2P	180-181004-11	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T3P	180-181004-12	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T4P	180-181004-13	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T5P	180-181004-14	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T6P	180-181004-15	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T7P	180-181004-16	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T8P	180-181004-17	10/1/2024	LA	N		1	1		1
		LORNG_SB01055_13-15_100124 T9P	180-181004-18	10/1/2024	LA	N		1	1		1
	SB05041	LORNG_SB05041_0-2_100124 T09P	180-181004-27	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T1P	180-181004-19	10/1/2024	LA	N		1	1	2	1
		LORNG_SB05041_0-2_100124 T2P	180-181004-20	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T3P	180-181004-21	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T4P	180-181004-22	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T5P	180-181004-23	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T6P	180-181004-24	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T7P	180-181004-25	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_0-2_100124 T8P	180-181004-26	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T1P	180-181004-28	10/1/2024	LA	N		1	1	2	1
		LORNG_SB05041_10-12_100124 T2P	180-181004-29	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T3P	180-181004-30	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T4P	180-181004-31	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T5P	180-181004-32	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T6P	180-181004-33	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T7P	180-181004-34	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T8P	180-181004-35	10/1/2024	LA	N		1	1		1
		LORNG_SB05041_10-12_100124 T9P	180-181004-36	10/1/2024	LA	N		1	1		1
180-181034-1	SB07036	LORNG_SB07036_0-2_093024 T1P	180-181034-1	9/30/2024	LA	N		1	1	2	1
		LORNG_SB07036_0-2_093024 T2P	180-181034-2	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T3P	180-181034-3	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T4P	180-181034-4	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T5P	180-181034-5	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T6P	180-181034-6	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T7P	180-181034-7	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T8P	180-181034-8	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_0-2_093024 T9P	180-181034-9	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T1P	180-181034-10	9/30/2024	LA	N		1	1	2	1
		LORNG_SB07036_13-15_093024 T2P	180-181034-11	9/30/2024	LA	N		1	1		1

Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:3/19/25

Table 1
Stage 1 Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 LEAF Sampling Program

						Method Class	PFAS	WetChem			
						Analysis Method	E1633DR	A2510B	A2580B	D2216	SW9040C
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
180-181034-1	SB07036	LORNG_SB07036_13-15_093024 T3P	180-181034-12	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T4P	180-181034-13	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T5P	180-181034-14	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T6P	180-181034-15	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T7P	180-181034-16	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T8P	180-181034-17	9/30/2024	LA	N		1	1		1
		LORNG_SB07036_13-15_093024 T9P	180-181034-18	9/30/2024	LA	N		1	1		1
	SB12025	LORNG_SB12025_0-2_100124 T1P	180-181034-19	10/1/2024	LA	N		1	1	2	1
		LORNG_SB12025_0-2_100124 T2P	180-181034-20	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T3P	180-181034-21	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T4P	180-181034-22	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T5P	180-181034-23	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T6P	180-181034-24	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T7P	180-181034-25	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T8P	180-181034-26	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_0-2_100124 T9P	180-181034-27	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T1P	180-181034-28	10/1/2024	LA	N		1	1	2	1
		LORNG_SB12025_13-15_100124 T2P	180-181034-29	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T3P	180-181034-30	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T4P	180-181034-31	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T5P	180-181034-32	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T6P	180-181034-33	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T7P	180-181034-34	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T8P	180-181034-35	10/1/2024	LA	N		1	1		1
		LORNG_SB12025_13-15_100124 T9P	180-181034-36	10/1/2024	LA	N		1	1		1
FC20059	SB07036	LORNG_SB07036_0-2_093024 T1	FC20059-1	10/30/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T2	FC20059-2	10/30/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T3	FC20059-3	10/31/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T1	FC20059-4	10/30/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T2	FC20059-5	10/30/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T3	FC20059-6	10/31/2024	LA	N	40				
	SB12025	LORNG_SB12025_0-2_100124 T1	FC20059-7	10/30/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T2	FC20059-8	10/30/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T3	FC20059-9	10/31/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T1	FC20059-10	10/30/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T2	FC20059-11	10/30/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T3	FC20059-12	10/31/2024	LA	N	40				
FC20061	SB01055	LORNG_SB01055_0-2_100124 T1	FC20061-1	10/30/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T2	FC20061-2	10/30/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T3	FC20061-3	10/31/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T1	FC20061-4	10/30/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T2	FC20061-5	10/30/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T3	FC20061-6	10/31/2024	LA	N	40				
	SB05041	LORNG_SB05041_0-2_100124 T1	FC20061-7	10/30/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T2	FC20061-8	10/30/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T3	FC20061-9	10/31/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T1	FC20061-10	10/30/2024	LA	N	40				
FC20061	SB05041	LORNG_SB05041_10-12_100124 T2	FC20061-11	10/30/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T3	FC20061-12	10/31/2024	LA	N	40				
FC20143	SB01055	LORNG_SB01055_0-2_100124 T4	FC20143-1	10/31/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T5	FC20143-2	11/1/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T6	FC20143-3	11/3/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T7	FC20143-4	11/4/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T4	FC20143-5	10/31/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T5	FC20143-6	11/1/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T6	FC20143-7	11/3/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T7	FC20143-8	11/4/2024	LA	N	40				
	SB05041	LORNG_SB05041_0-2_100124 T4	FC20143-9	10/31/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T5	FC20143-10	11/1/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T6	FC20143-11	11/3/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T7	FC20143-12	11/4/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T4	FC20143-13	10/31/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T5	FC20143-14	11/1/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T6	FC20143-15	11/3/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T7	FC20143-16	11/4/2024	LA	N	40				

Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:3/19/25

Table 1
Stage 1 Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 LEAF Sampling Program

						Method Class	PFAS	WetChem			
						Analysis Method	E1633DR	A2510B	A2580B	D2216	SW9040C
						Fraction	T	T	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount	ParamCount	ParamCount
FC20145	SB07036	LORNG_SB07036_0-2_093024 T4	FC20145-1	10/31/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T5	FC20145-2	11/1/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T6	FC20145-3	11/3/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T7	FC20145-4	11/4/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T4	FC20145-5	10/31/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T5	FC20145-6	11/1/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T6	FC20145-7	11/3/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T7	FC20145-8	11/4/2024	LA	N	40				
	SB12025	LORNG_SB12025_0-2_100124 T4	FC20145-9	10/31/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T5	FC20145-10	11/1/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T6	FC20145-11	11/3/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T7	FC20145-12	11/4/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T4	FC20145-13	10/31/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T5	FC20145-14	11/1/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T6	FC20145-15	11/3/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T7	FC20145-16	11/4/2024	LA	N	40				
FC20336	SB07036	LORNG_SB07036_0-2_093024 T8	FC20336-1	11/8/2024	LA	N	40				
		LORNG_SB07036_0-2_093024 T9	FC20336-2	11/9/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T8	FC20336-3	11/8/2024	LA	N	40				
		LORNG_SB07036_13-15_093024 T9	FC20336-4	11/9/2024	LA	N	40				
	SB12025	LORNG_SB12025_0-2_100124 T8	FC20336-5	11/8/2024	LA	N	40				
		LORNG_SB12025_0-2_100124 T9	FC20336-6	11/9/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T8	FC20336-7	11/8/2024	LA	N	40				
		LORNG_SB12025_13-15_100124 T9	FC20336-8	11/9/2024	LA	N	40				
FC20337	SB01055	LORNG_SB01055_0-2_100124 T8	FC20337-1	11/8/2024	LA	N	40				
		LORNG_SB01055_0-2_100124 T9	FC20337-2	11/9/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T8	FC20337-3	11/8/2024	LA	N	40				
		LORNG_SB01055_13-15_100124 T9	FC20337-4	11/9/2024	LA	N	40				
FC20337	SB05041	LORNG_SB05041_0-2_100124 T8	FC20337-5	11/8/2024	LA	N	40				
		LORNG_SB05041_0-2_100124 T9	FC20337-6	11/9/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T8	FC20337-7	11/8/2024	LA	N	40				
		LORNG_SB05041_10-12_100124 T9	FC20337-8	11/9/2024	LA	N	40				

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

LA = Leachate Sample

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:3/19/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20059													
			Location	SB07036						SB12025							
			Sample Date	10/30/2024				10/31/2024		10/30/2024				10/31/2024			
			Sample ID	LORNG_SB07036_02_093024 T1	LORNG_SB07036_02_093024 T2	LORNG_SB07036_13-15_093024 T1	LORNG_SB07036_13-15_093024 T2	LORNG_SB07036_02_093024 T3	LORNG_SB07036_13-15_093024 T3	LORNG_SB12025_02_100124 T1	LORNG_SB12025_02_100124 T2	LORNG_SB12025_13-15_100124 T1	LORNG_SB12025_13-15_100124 T2	LORNG_SB12025_02_100124 T3	LORNG_SB12025_13-15_100124 T3
			QC Code	N	N	N	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	135	162	3.8 J	2.5 J	87.2	3.7 U	32.6	20	3.6 J	4.7 U	4.1 J	3.6 U
		Perfluoropentanoic acid (PFPeA)	NG/L	75.4	94.6	2.7 J	1.5 J	57.4	1.9 U	25.7	17.1	9.5 J	6.1 J	4.3 J	6.4 J
		Perfluorohexanoic acid (PFHxA)	NG/L	44.7	53.4	5.6	3 J	31.6	2.3 J	31.7	21.6	10.4	6.9	5.7	4.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	45.4	53.9	2.2 J	2.2 J	35.9	2 J	30	22.3	22.3	8.4	6.9	3.5 J
		Perfluorooctanoic acid (PFOA)	NG/L	52.6	63.8	5.7	6.8	51.3	7.5	24.8	28.2	209	55.7	14.5	10.4
		Perfluorononanoic acid (PFNA)	NG/L	15.8	25.8	2.5 J	2 J	28.2	1.6 J	5.4	9.7	0.91 J	2.3 U	8.7	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	2.6 U	1.2 J	2.1 U	2 U	1.1 J	1.9 U	2.5 U	1.5 J	0.97 J	2.3 U	1.4 J	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	0.72 J	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	17 UJ	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.3 J	3 J	1.4 J	0.86 J	1.7 J	0.77 J	2.5 J	1.1 J	3 J	2.2 J	2 U	1.5 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.7 J	1.9 J	1.4 J	4 U	5.3 U	3.7 U	2.6 J	1.3 J	3.4 J	2.6 J	4 U	1.4 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	45.9	40.8	15.5	11.4	31.5	9.1	19.2	13.6	24.7	16.9	6.1	10.9
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	4.8 J	3.6 J	2.1 U	2 U	3.3 J	1.9 U	0.93 J	1.2 J	2.5 J	1.6 J	0.91 J	1.1 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	136	152	45.6	30.1	180	24.7	35.3	44.6	222	131	53	85.4
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	1.2 J	0.87 J	2 U	1.8 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	11 U	10 U	8.3 U	7.9 U	11 U	7.4 U	10 U	8 U	9.6 U	9.3 U	8 U	7.3 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	11 U	10 U	8.3 U	7.9 U	11 U	7.4 U	10 U	8 U	9.6 U	9.3 U	8 U	7.3 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	11 U	10 U	8.3 U	7.9 U	11 U	7.4 U	10 U	8 U	10 J	5.3 J	8 U	7.3 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.6 U	2.6 U	4.8	3.6 J	2.6 U	3.1 J	2.5 U	2 U	1.4 J	2.3 U	2 U	1.8 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	170 UJ	26 U	21 U	20 U	26 U	19 U	25 U	20 U	24 U	23 U	20 U	18 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	170 UJ	26 U	21 U	20 U	26 U	19 U	25 U	20 U	24 U	23 U	20 U	18 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.6 U	2.6 U	1.5 J	1.1 J	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	5.3 U	5.2 U	4.2 U	4 U	5.3 U	3.7 U	5.1 U	4 U	4.8 U	4.7 U	4 U	3.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.6 U	2.6 U	2.1 U	2 U	2.6 U	1.9 U	2.5 U	2 U	2.4 U	2.3 U	2 U	1.8 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	13 U	13 U	10 U	9.9 U	13 U	9.3 U	13 U	10 U	12 U	12 U	10 U	9.1 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	26 U	26 U	21 U	20 U	26 U	19 U	25 U	20 U	24 U	23 U	20 U	18 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	26 U	26 U	21 U	20 U	26 U	19 U	25 U	20 U	24 U	23 U	20 U	18 U

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
Date:3/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

		SDG	FC20061													
		Location	SB01055						SB05041							
		Sample Date	10/30/2024				10/31/2024		10/30/2024				10/31/2024			
		Sample ID	LORNG_SB01055_02_100124 T1	LORNG_SB01055_02_100124 T2	LORNG_SB01055_13-15_100124 T1	LORNG_SB01055_13-15_100124 T2	LORNG_SB01055_02_100124 T3	LORNG_SB01055_13-15_100124 T3	LORNG_SB05041_02_100124 T1	LORNG_SB05041_02_100124 T2	LORNG_SB05041_10-12_100124 T1	LORNG_SB05041_10-12_100124 T2	LORNG_SB05041_02_100124 T3	LORNG_SB05041_10-12_100124 T3		
		QC Code	N	N	N	N	N	N	N	N	N	N	N	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	76.1	59.3	4.1 U	3.9 U	40.6	3.7 U	26.7	29.2	8.3 J	6.3 J	22.2	6.3 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	36.8	31.4	2 U	2 U	19.8	1.9 U	13.8	18.1	10.8	9.6	12.9	7.7	
		Perfluorohexanoic acid (PFHxA)	NG/L	67.6	50.6	1.6 J	0.81 J	42.2	0.98 J	10.1	13.2	6.7	5.9	10.7	6	
		Perfluoroheptanoic acid (PFHpA)	NG/L	33.2	36.2	4.6	1.6 J	37.2	2.4 J	15.3	18.8	7.1	7.5	17.7	6.6	
		Perfluorooctanoic acid (PFOA)	NG/L	33.7	42.5	39.6	10.4	79.1	18.1	31.3	39.6	24.8	41.7	50.6	40.8	
		Perfluorononanoic acid (PFNA)	NG/L	4.3	5.3	2 U	2 U	15.6	1.9 U	3.7 J	7.9	1.5 J	2.2 J	15.7	3 J	
		Perfluorodecanoic acid (PFDA)	NG/L	2.2 U	1.7 U	2 U	2 U	0.89 J	1.9 U	2.1 U	0.85 J	2.5 U	2.1 U	1.9 J	0.66 J	
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.9 J	2.2 J	0.66 J	2 U	1.8 J	1.9 U	4.9	3.4 J	2 J	1.4 J	2.5 J	1.2 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.3 J	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	3.5 J	3.2 J	5 U	1.5 J	2.8 J	1.4 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	37.4	38.3	2.7 J	1.1 J	56.4	1.9 J	23.6	28.9	16.2	13.6	32.6	11.5	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2 U	0.77 J	2 U	2 U	1.5 J	1.9 U	2.1 U	0.78 J	0.8 J	2.1 U	1.5 J	1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13	10.5	8	1.8 J	23.4	2.7 J	14	23.1	25.8	23.2	36.7	31.3	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.7 U	6.9 U	8.2 U	7.8 U	7.5 U	7.4 U	8.3 U	8.3 U	10 U	8.3 U	7.4 U	7.7 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.7 U	6.9 U	8.2 U	7.8 U	7.5 U	7.4 U	8.3 U	8.3 U	10 U	8.3 U	7.4 U	7.7 U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.7 U	6.9 U	8.2 U	7.8 U	7.5 U	7.4 U	8.3 U	8.3 U	10 U	8.3 U	7.4 U	7.7 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	0.73 J	2.5 U	2.1 U	1.9 U	1.9 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	22 U	17 U	20 U	20 U	19 U	19 U	21 U	21 U	25 U	21 U	19 U	19 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	22 U	17 U	20 U	20 U	19 U	19 U	21 U	21 U	25 U	21 U	19 U	19 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.2 U	1.7 U	1 J	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.3 U	3.4 U	4.1 U	3.9 U	3.8 U	3.7 U	4.2 U	4.2 U	5 U	4.2 U	3.7 U	3.8 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2 U	1.7 U	2 U	2 U	1.9 U	1.9 U	2.1 U	2.1 U	2.5 U	2.1 U	1.9 U	1.9 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	11 U	8.6 U	10 U	9.8 U	9.4 U	9.3 U	10 U	10 U	13 U	10 U	9.3 U	9.6 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	22 U	17 U	20 U	20 U	19 U	19 U	21 U	21 U	25 U	21 U	19 U	19 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	22 U	17 U	20 U	20 U	19 U	19 U	21 U	21 U	25 U	21 U	19 U	19 U	

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Date:3/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20143															
			Location	SB01055												SB05041			
			Sample Date	10/31/2024		11/1/2024		11/3/2024		11/4/2024				10/31/2024		11/1/2024			
			Sample ID	LORNG_SB01055_02_100124 T4	LORNG_SB01055_13-15_100124 T4	LORNG_SB01055_02_100124 T5	LORNG_SB01055_13-15_100124 T5	LORNG_SB01055_02_100124 T6	LORNG_SB01055_13-15_100124 T6	LORNG_SB01055_02_100124 T7	LORNG_SB01055_13-15_100124 T7			LORNG_SB05041_02_100124 T4	LORNG_SB05041_10-12_100124 T4	LORNG_SB05041_02_100124 T5	LORNG_SB05041_10-12_100124 T5		
			QC Code	N	N	N	N	N	N	N	N			N	N	N	N		
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	31.1	1.9 J	15.9 J	3.7 U	5.4 J	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		Perfluoropentanoic acid (PFPeA)	NG/L	21.6	2 U	18.2 J	1.9 U	4.9 J	1.8 U	2.5 UJ	1.9 U			9.4 U	2.2 J	20 U	1.8 J		
		Perfluorohexanoic acid (PFHxA)	NG/L	12	0.74 J	9.7 J	0.55 J	2.5 J	1.8 U	0.67 J	1.9 U			0.96 J	1.9 J	2 U	1.4 J		
		Perfluoroheptanoic acid (PFHpA)	NG/L	16.7	0.71 J	14.4 J	0.55 J	3.7	1.8 U	2.1 U	1.9 U			1.3 J	1.6 J	0.75 J	1.2 J		
		Perfluorooctanoic acid (PFOA)	NG/L	30	3.1 J	25.9 J	2.3 J	9.5	0.96 J	2.8 J	0.94 U			3.7 J	4.1	1.4 J	2.9 J		
		Perfluorononanoic acid (PFNA)	NG/L	20.8	2 U	23 J	1.9 U	14.4	1.8 U	9.8 J	1.9 U			4.9	1.8 U	2.6 J	1.9 U		
		Perfluorodecanoic acid (PFDA)	NG/L	0.82 J	2 U	0.94 J	1.9 U	0.72 J	1.8 U	0.75 J	1.9 U			1.1 J	1.8 U	1.2 J	1.9 U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	2 U	2.5 UJ	1.9 U	1.8 U	1.8 U	2.5 UJ	1.9 U			1.9 U	1.8 U	0.67 J	1.9 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	2 U	2 U	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	2 U	2 U	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	2 U	2 U	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.76 J	2 U	0.87 J	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	0.6 J	2 U	0.53 J		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6 U	3.9 U	1.3 J	3.7 U	1.2 J	3.6 U	5 UJ	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	18.8	3.7 J	16.8 J	2.8 J	8.4	1.2 J	4.6 J	1.9 U			1.4 J	5.1	0.81 J	4.5		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.3 J	2 U	3 J	1.9 U	1.6 J	1.8 U	0.91 J	1.9 U			1.9 U	0.59 J	2 U	1.9 U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	136	9.5	151	6.7	135	3.2 J	105 J	2 J			34.7	38.3	33.2	34.1		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	2 U	2.5 UJ	1.9 U	1.8 U	1.8 U	0.61 J	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 U	2 U	2.5 UJ	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6 U	3.9 U	5 UJ	3.7 U	3.6 U	3.6 U	5 UJ	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3 U	7.8 U	10 UJ	7.4 U	7.3 U	7.3 U	8.3 U	7.5 U			7.5 U	7.3 U	78 U	7.4 U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3 U	7.8 U	7.8 U	7.4 U	7.3 U	7.3 U	8.3 U	7.5 U			7.5 U	7.3 U	7.8 U	7.4 U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3 U	7.8 U	7.8 U	7.4 U	7.3 U	7.3 U	8.3 U	7.5 U			7.5 U	7.3 U	7.8 U	7.4 U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.2 J	2 U	1 J	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 U	20 U	20 U	19 U	18 U	18 U	21 U	19 U			19 U	18 U	20 U	19 U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 U	20 U	20 U	19 U	18 U	18 U	21 U	19 U			19 U	18 U	20 U	19 U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	2 U	2 U	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	2 U	2 U	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6 U	3.9 U	5 UJ	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			19 U	3.6 U	39 U	3.7 U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6 U	3.9 U	5 UJ	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.9 U	3.9 U	3.7 U	3.6 U	3.6 U	4.2 U	3.8 U			3.8 U	3.6 U	3.9 U	3.7 U		
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	2 U	2.5 UJ	1.9 U	1.8 U	1.8 U	2.1 U	1.9 U			1.9 U	1.8 U	2 U	1.9 U		
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1 U	9.8 U	9.8 U	9.3 U	9.1 U	9.1 U	10 U	9.4 U			9.4 U	9.1 U	9.8 U	9.3 U		
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	20 U	25 UJ	19 U	18 U	18 U	21 U	19 U			19 U	18 U	20 U	19 U		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U	20 U	25 UJ	19 U	18 U	18 U	21 U	19 U			19 U	18 U	20 U	19 U		

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
Date:3/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20143						FC20145									
			Location	SB05041						SB07036									
			Sample Date	11/3/2024				11/4/2024		10/31/2024		11/1/2024		11/3/2024		11/4/2024			
			Sample ID	LORNG_SB05041_0-2_100124 T6		LORNG_SB05041_10-12_100124 T6		LORNG_SB05041_0-2_100124 T7		LORNG_SB05041_10-12_100124 T7		LORNG_SB07036_0-2_093024 T4		LORNG_SB07036_13-15_093024 T4		LORNG_SB07036_0-2_093024 T5		LORNG_SB07036_13-15_093024 T5	
			QC Code	N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4.3	J	4	U	4	U	4.3	U
		Perfluoropentanoic acid (PFPeA)	NG/L	18	U	0.98	J	1.9	U	1.9	U	2.1	J	2	U	1.5	J	2.1	U
		Perfluorohexanoic acid (PFHxA)	NG/L	18	U	0.75	J	1.9	U	1.9	U	5.9		2	U	2.9	J	2.1	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.68	J	0.62	J	1.9	U	1.9	U	6.6		1.4	J	2.8	J	1.4	J
		Perfluorooctanoic acid (PFOA)	NG/L	0.81	J	1.1	J	0.72	J	0.93	U	28.4		11.9		13.3		15	
		Perfluorononanoic acid (PFNA)	NG/L	0.7	J	1.9	U	1.9	U	1.9	U	10.8		2	U	10.1		2.1	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.88	J	1.9	U	0.6	J	1.9	U	0.58	J	2	U	0.71	J	2.1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.97	J	1.9	U	0.96	J	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	18	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	36	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	18	U	2.3	J	1.9	U	1	J	19.6		0.78	J	9.1		2.1	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1	J	2	U	0.7	J	2.1	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	22		21.4		12.6		10.1		19.9		1.5	J	21.5		1.2	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	73	U	7.5	U	7.7	U	7.4	U	7.9	U	7.9	U	8	U	8.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.5	U	7.7	U	7.4	U	7.9	U	7.9	U	8	U	8.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.5	U	7.7	U	7.4	U	7.9	U	7.9	U	8	U	8.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.8	U	3.8	U	37	U	4	U	4	U	4	U	4.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	19	U	19	U	19	U	20	U	20	U	20	U	21	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	19	U	19	U	19	U	20	U	20	U	20	U	21	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	36	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	36	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.8	U	3.8	U	3.7	U	4	U	4	U	4	U	4.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	18	U	1.9	U	1.9	U	1.9	U	2	U	2	U	2	U	2.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.4	U	9.6	U	9.3	U	9.9	U	9.9	U	10	U	11	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	180	U	19	U	19	U	19	U	20	U	20	U	20	U	21	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	180	U	19	U	19	U	19	U	20	U	20	U	20	U	21	U

			SDG	FC20145															
			Location	SB07036															
			Sample Date	11/3/2024				11/4/2024											
			Sample ID	LORNG_SB07036_0-2_093024 T6		LORNG_SB07036_13-15_093024 T6		LORNG_SB07036_0-2_093024 T7		LORNG_SB07036_13-15_093024 T7									
			QC Code	N		N		N		N									
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier								
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorohexanoic acid (PFHxA)	NG/L	1.2	J	2	U	2.2	U	2	U								
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.1	J	0.92	J	0.62	J	0.54	J								
		Perfluorooctanoic acid (PFOA)	NG/L	3	J	12.6		1.2	J	6.4									
		Perfluorononanoic acid (PFNA)	NG/L	5		2	U	2.1	J	2	U								
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U	0.58	J	2	U								
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4	U	4.1	U	4.4	U	4	U								
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.8	J	2	U	1.1	J	2	U								
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorooctanesulfonic acid (PFOS)	NG/L	15.6		1	J	12.1		0.85	J								
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	4.1	U	4.4	U	4	U								
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8	U	8.2	U	8.9	U	7.9	U								
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8	U	8.2	U	8.9	U	7.9	U								
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8	U	8.2	U	8.9	U	7.9	U								
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U	2.2	U	2	U								
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U	22	U	20	U								
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U	22	U	20	U								
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U	2.2	U	2	U								
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2.2	U	2	U								
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	4.1	U	4.4	U	4	U								
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	4.1	U	4.4	U	4	U								
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	4.1	U	4.4	U	4	U								
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	2.2	U	2	U								
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U	11	U	9.9	U								
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	22	U	20	U								
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	22	U	20	U								

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20145										FC20336					
			Location	SB12025										SB07036					
			Sample Date	10/31/2024		11/1/2024		11/3/2024		11/4/2024		11/8/2024		11/9/2024					
			Sample ID	LORNG_SB12025_02_100124 T4	LORNG_SB12025_13-15_100124 T4	LORNG_SB12025_02_100124 T5	LORNG_SB12025_13-15_100124 T5	LORNG_SB12025_02_100124 T6	LORNG_SB12025_13-15_100124 T6	LORNG_SB12025_02_100124 T7	LORNG_SB12025_13-15_100124 T7	LORNG_SB07036_02_093024 T8	LORNG_SB07036_13-15_093024 T8	LORNG_SB07036_02_093024 T9	LORNG_SB07036_13-15_093024 T9				
			QC Code	N	N	N	N	N	N	N	N	N	N	N	N				
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.9	J	2.1	J	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	3.1	J	2.8	J	2.1	U	1.4	J	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2.4	J	2	J	1.5	J	1.4	J	2	U	0.8	J	2.1	U	2.1	U	0.62	J	2	U	2.1	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.8		3.3	J	2.3	J	2.2	J	1.1	J	1	J	0.55	J	0.62	J	0.82	J	2	U	2.1	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	16.3		26.5		9.2		19.5		3.3	J	11.6		1.4	J	5.1		1.5	J	1	U	0.64	J	1	U
		Perfluorononanoic acid (PFNA)	NG/L	7.9		1.4	J	7.4		1.1	J	2.2	J	2	U	2.1	U	2.1	U	7.3		2	U	4.2	J	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.61	J	2	U	1.3	J	2	U	1.1	J	2	U	1.2	J	2.1	U	0.88	J	2	U	0.77	J	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.7	J	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	9.2		5		4.8		3.6	J	1.5	J	2	J	2.1	U	1.3	J	3.9	J	2	U	2.5	J	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1	J	2	U	0.76	J	2	U	2	U	2	U	2.1	U	2.1	U	0.82	J	2	U	2.1	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	26.9		18.6		37.5		15.4		28		9.6		19.4		4.8		150		1.4	J	145		0.7	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.3	U	8	U	8.3	U	8.1	U	8	U	7.9	U	8.4	U	8.3	U	8	U	8	U	8.5	U	8.1	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.3	U	8	U	8.3	U	8.1	U	8	U	7.9	U	8.4	U	8.3	U	8	U	8	U	8.5	U	8.1	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.3	U	8	U	8.3	U	8.1	U	8	U	7.9	U	8.4	U	8.3	U	8	U	8	U	8.5	U	8.1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	21	U	20	U	21	U	20	U	20	U	20	U	21	U	21	U	20	U	20	U	21	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	21	U	20	U	21	U	20	U	20	U	20	U	21	U	21	U	20	U	20	U	21	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.2	U	4	U	4.2	U	4	U	4	U	4	U	4.2	U	4.2	U	4	U	4	U	4.3	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1	U	2	U	2.1	U	2	U	2	U	2	U	2.1	U	2.1	U	2	U	2	U	2.1	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U	10	U	10	U	10	U	9.9	U	11	U	10	U	10	U	10	U	11	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	21	U	20	U	21	U	20	U	20	U	20	U	21	U	21	U	20	U	20	U	21	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	21	U	20	U	21	U	20	U	20	U	20	U	21	U	21	U	20	U	20	U	21	U	20	U

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
Date:3/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20336		FC20336		FC20337											
			Location	SB12025		SB12025		SB01055								SB05041			
			Sample Date	11/8/2024		11/9/2024		11/8/2024				11/9/2024				11/8/2024			
			Sample ID	LORNG_SB12025_0-2_100124 T8		LORNG_SB12025_13-15_100124 T8		LORNG_SB12025_0-2_100124 T9		LORNG_SB12025_13-15_100124 T9		LORNG_SB01055_0-2_100124 T8		LORNG_SB01055_13-15_100124 T8		LORNG_SB01055_0-2_100124 T9		LORNG_SB01055_13-15_100124 T9		LORNG_SB05041_0-2_100124 T8		LORNG_SB05041_10-12_100124 T8	
			QC Code	N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	0.55	J	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.91	J	1.1	U	0.69	J	1	U	1	J	6.3		0.7	J	3.8	J	1.4	J	4.6	
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2.2	U	2	U	2.1	U	1.3	J	2	U	0.66	J	2	U	0.61	J	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2.2	U	2	U	2.1	U	0.63	J	2	U	0.54	J	2	U	1	J	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.83	J	2.2	U	0.79	J	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2	U	0.87	J	2	U	2.1	U	1	J	2	U	2	U	2	U	0.83	J	0.95	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	10.1		10.3		8		6.3		12		0.93	J	7.1		2	U	15.3		4.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.2	U	9	U	8.2	U	8.3	U	8	U	8	U	8.2	U	8	U	7.9	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.2	U	9	U	8.2	U	8.3	U	8	U	8	U	8.2	U	8	U	7.9	U	8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.2	U	9	U	8.2	U	8.3	U	8	U	8	U	8.2	U	8	U	7.9	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	22	U	20	U	21	U	20	U	20	U	20	U	20	U	20	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	22	U	20	U	21	U	20	U	20	U	20	U	20	U	20	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.1	U	4.5	U	4.1	U	4.2	U	4	U	4	U	4.1	U	4	U	4	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2.2	U	2	U	2.1	U	2	U	2	U	2	U	2	U	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	11	U	10	U	10	U	10	U	10	U	10	U	10	U	9.9	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	22	U	20	U	21	U	20	U	20	U	20	U	20	U	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	22	U	20	U	21	U	20	U	20	U	20	U	20	U	20	U	20	U

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
Date:3/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20337			
			Location	SB05041			
			Sample Date	11/9/2024			
			Sample ID	LORNG_SB05041_0-2_100124 T9		LORNG_SB05041_10-12_100124 T9	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1	U	4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.83	J	2.3	J
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.8	J	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1	U	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2	U	0.72	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13.1		2.4	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.1	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.2	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.2	U	8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.2	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.1	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.1	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.1	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.1	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.1	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.1	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.1	U	4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.1	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U

Prepared by: AKN
Date: 3/19/25
Checked by:TLC
Date:3/21/25

Table 2 – Summary of Analytical Results
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	180-181004-1																				
			Location	SB01055																				
			Sample Date	10/1/2024																				
			Sample ID	LORNG_SB01055_0-2_100124 T1P		LORNG_SB01055_0-2_100124 T2P		LORNG_SB01055_0-2_100124 T3P		LORNG_SB01055_0-2_100124 T4P		LORNG_SB01055_0-2_100124 T5P		LORNG_SB01055_0-2_100124 T6P		LORNG_SB01055_0-2_100124 T7P		LORNG_SB01055_0-2_100124 T8P		LORNG_SB01055_0-2_100124 T9P		LORNG_SB01055_13-15_100124 T1P		LORNG_SB01055_13-15_100124 T2P		LORNG_SB01055_13-15_100124 T3P		LORNG_SB01055_13-15_100124 T4P		LORNG_SB01055_13-15_100124 T5P	
			QC Code	N		N		N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	210		210		170		140		120		99		77		71		52		130		130		130		110		95	
		OXIDATION-REDUCTION POTENTIAL	ML	170		180		170		190		170		160		160		180		190		170		160		160		180		190	
		MOISTURE, PERCENT	PERCENT	16.3																		11.2									
		SOLIDS, PERCENT	PERCENT	83.7																		88.8									
		PH	PH UNITS	7.2		7.3		7.1		7.6		7.4		7.2		6.7		7.3		7.2		7.8		7.7		7.8		8		7.9	

Prepared by: AKN
Date: 3/3/25
Checked by:TLC
Date:3/19/25

Table 2 – Summary of Analytical Results
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	180-181004-1																		
			Location	SB01055																		
			Sample Date	10/1/2024																		
			Sample ID	LORNG_SB01055_13-15_100124 T6P		LORNG_SB01055_13-15_100124 T7P		LORNG_SB01055_13-15_100124 T8P		LORNG_SB01055_13-15_100124 T9P		LORNG_SB05041_0-2_100124 T09P		LORNG_SB05041_0-2_100124 T1P		LORNG_SB05041_0-2_100124 T2P		LORNG_SB05041_0-2_100124 T3P		LORNG_SB05041_0-2_100124 T4P		LORNG_SB05041_0-2_100124 T5P		LORNG_SB05041_0-2_100124 T6P		LORNG_SB05041_0-2_100124 T7P		LORNG_SB05041_0-2_100124 T8P		LORNG_SB05041_10-12_100124 T1P	
			QC Code	N		N		N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	72		56		50		43		75		300		290		240		200		170		130		91		93		160	
		OXIDATION-REDUCTION POTENTIAL	ML	160		190		210		160		230		180		190		200		200		180		210		160		150		170	
		MOISTURE, PERCENT	PERCENT											17.3																10.1	
		SOLIDS, PERCENT	PERCENT											82.7																89.9	
		PH	PH UNITS	8		8.2		7.8		7.8		7.5		7.5		7.6		7.6		7.8		7.5		7.4		7.3		7.5		7.2	

Prepared by: AKN
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Date:3/19/25

Table 2 – Summary of Analytical Results
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	180-181004-1								180-181034-1											
			Location	SB05041								SB07036											
			Sample Date	10/1/2024								9/30/2024											
			Sample ID	LORNG_SB05041_10-12_100124 T2P		LORNG_SB05041_10-12_100124 T3P		LORNG_SB05041_10-12_100124 T4P		LORNG_SB05041_10-12_100124 T5P		LORNG_SB05041_10-12_100124 T6P		LORNG_SB05041_10-12_100124 T7P		LORNG_SB05041_10-12_100124 T8P		LORNG_SB05041_10-12_100124 T9P		LORNG_SB07036_0-2_093024 T1P		LORNG_SB07036_0-2_093024 T2P	
			QC Code	N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	160		140		120		110		90		74		67		60		150		140	
		OXIDATION-REDUCTION POTENTIAL	ML	170		180		190		180		170		220		230		210		200		200	
		MOISTURE, PERCENT	PERCENT																	16.6			
		SOLIDS, PERCENT	PERCENT																	83.4			
		PH	PH UNITS	7.4		7.6		8		7.9		7.8		7.7		7.8		7.8		7		7.2	

			SDG	180-181034-1																			
			Location	SB07036																			
			Sample Date	9/30/2024																			
			Sample ID	LORNG_SB07036_0-2_093024 T3P		LORNG_SB07036_0-2_093024 T4P		LORNG_SB07036_0-2_093024 T5P		LORNG_SB07036_0-2_093024 T6P		LORNG_SB07036_0-2_093024 T7P		LORNG_SB07036_0-2_093024 T8P		LORNG_SB07036_0-2_093024 T9P		LORNG_SB07036_13-15_093024 T1P		LORNG_SB07036_13-15_093024 T2P			
			QC Code	N		N		N		N		N		N		N		N		N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	120		120		98		75		80		51		110		110					
		OXIDATION-REDUCTION POTENTIAL	ML	220		210		200		210		210		150		190		180					
		MOISTURE, PERCENT	PERCENT													10.1							
		SOLIDS, PERCENT	PERCENT													89.9							
		PH	PH UNITS	7.3		7.2		6.9		7		7.2		7.1		7.8		7.9					

Prepared by: AKN
Date: 3/3/25
Checked by:TLC
Date:3/19/25

Table 2 – Summary of Analytical Results
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

			SDG	180-181034-1															
			Location	SB07036													SB12025		
			Sample Date	9/30/2024													10/1/2024		
			Sample ID	LORNG_SB07036_13-15_093024 T3P		LORNG_SB07036_13-15_093024 T4P		LORNG_SB07036_13-15_093024 T5P		LORNG_SB07036_13-15_093024 T6P		LORNG_SB07036_13-15_093024 T7P		LORNG_SB07036_13-15_093024 T8P		LORNG_SB07036_13-15_093024 T9P		LORNG_SB12025_0-2_100124 T1P		LORNG_SB12025_0-2_100124 T2P	
			QC Code	N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	99		90		85		68		55		49		43		360		320	
		OXIDATION-REDUCTION POTENTIAL	ML	200		190		170		170		160		170		190		180		190	
		MOISTURE, PERCENT	PERCENT															5.8			
		SOLIDS, PERCENT	PERCENT															94.2			
		PH	PH UNITS	7.8		8		7.8		8.1		8.3		7.7		7.9		7.4		7.4	

Prepared by: AKN
Date: 3/3/25
Checked by:TLC
Date:3/19/25

Table 2 – Summary of Analytical Results
Stage 1 Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

SDG				180-181034-1																								180-181034-1			
Location				SB12025																								SB12025			
Sample Date				10/1/2024																								10/1/2024			
Sample ID				LORNG_SB12025_0-2_100124 T3P		LORNG_SB12025_0-2_100124 T4P		LORNG_SB12025_0-2_100124 T5P		LORNG_SB12025_0-2_100124 T6P		LORNG_SB12025_0-2_100124 T7P		LORNG_SB12025_0-2_100124 T8P		LORNG_SB12025_0-2_100124 T9P		LORNG_SB12025_13-15_100124 T1P		LORNG_SB12025_13-15_100124 T2P		LORNG_SB12025_13-15_100124 T3P		LORNG_SB12025_13-15_100124 T4P		LORNG_SB12025_13-15_100124 T5P		LORNG_SB12025_13-15_100124 T6P		LORNG_SB12025_13-15_100124 T7P		LORNG_SB12025_13-15_100124 T8P		LORNG_SB12025_13-15_100124 T9P	
QC Code				N		N		N		N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SPECIFIC CONDUCTANCE	UMHOS/CM	240		180		150		110		96		89		71		110		110		91		80		75		58		46		43		37	
		OXIDATION-REDUCTION POTENTIAL	ML	150		210		200		200		200		220		230		190		210		180		220		230		230		210		220		200	
		MOISTURE, PERCENT	PERCENT															13.1																	
		SOLIDS, PERCENT	PERCENT															86.9																	
		PH	PH UNITS	7.5		7.6		7.3		7.3		7.3		7.6		7.3		7.5		7.9		7.8		8		7.8		8.1		8.6		7.7		7.7	

Prepared by: AKN
Date: 3/3/25
Checked by:TLC
Date:3/19/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 LEAF Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC20059	E1633DR	T	FC20059-1	LORNG_SB07036_0-2_093024 T1	Perfluorotetradecanoic acid (PFTeDA)	17	U	17	UJ	HPHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	170	U	170	UJ	HPHL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	170	U	170	UJ	HPHL	NG/L
FC20143	E1633DR	T	FC20143-2	LORNG_SB01055_0-2_100124 T5	Perfluoropentanoic acid (PFPeA)	18.2	=	18.2	J	HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	9.7	=	9.7	J	HPHL	NG/L
					Perfluoroheptanoic acid (PFHpA)	14.4	=	14.4	J	HPHL	NG/L
					Perfluorooctanoic acid (PFOA)	25.9	=	25.9	J	HPHL	NG/L
					Perfluorononanoic acid (PFNA)	23	=	23	J	HPHL	NG/L
					Perfluorodecanoic acid (PFDA)	0.94	J	0.94	J	HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	2.5	U	2.5	UJ	HPHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.87	J	0.87	J	HPHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	16.8	=	16.8	J	HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3	J	3	J	HPHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	2.5	U	2.5	UJ	HPHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2.5	U	2.5	UJ	HPHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	5	U	5	UJ	HPHL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	10	U	10	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	5	U	5	UJ	HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	5	U	5	UJ	HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.5	U	2.5	UJ	HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	25	U	25	UJ	HPHL	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	25	U	25	UJ	HPHL	NG/L
FC20143	E1633DR	T	FC20143-4	LORNG_SB01055_0-2_100124 T7	Perfluoropentanoic acid (PFPeA)	2.5	U	2.5	UJ	HPHL	NG/L
					Perfluorooctanoic acid (PFOA)	2.8	J	2.8	J	HPHL	NG/L
					Perfluorononanoic acid (PFNA)	9.8	=	9.8	J	HPHL	NG/L
					Perfluoroundecanoic acid (PFUnA)	2.5	U	2.5	UJ	HPHL	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	5	U	5	UJ	HPHL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	4.6	J	4.6	J	HPHL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.91	J	0.91	J	HPHL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	105	=	105	J	HPHL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	5	U	5	UJ	HPHL	NG/L

Prepared by:AKN
Date:3/19/25
Checked by:TLC
Date:3/21/2025

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2024 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

One residential sample was collected at the Former Loring Air Force Base in Limestone, Maine, in February 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. The samples were submitted to Bureau Veritas in Mississauga, Ontario, for analysis.

BV analyzed one sample for PFAS by United States Environmental Protection Agency (USEPA) Draft Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2023). Data validation levels are established based on current USEPA guidelines for staged validation of analytical data (USEPA, 2009) and USDoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2A data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), field and laboratory duplicates, surrogates, internal standards, post digestion spikes, and serial dilutions), and QC sample frequency checks.

Stage 2B data validation includes all reviews performed in a Stage 2A data validation as well as review of initial calibration summaries, continuing calibration verification summaries, instrument performance/tuning summaries, dual column confirmation results, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stages 2A and 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on USDoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in USEPA Data Review and Validation Guidelines for PFAS (USEPA, 2023), and method specifications in the DoD QSM 5.4 and/or the referenced analytical methods when DoD specifications were not available. QC limits presented in the DoD QSM 5.4 and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes are applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Based on the data review, there were no validation qualification actions required and no validation qualifiers or reason codes were applied to sample results. Final results are presented in Table 2.

1.1 DATA USABILITY EVALUATION

The overall data quality and data usability for this data set is interpreted to meet the project objectives identified in the QAPP. Interpretations of data validation qualifications and data usability are provided below:

No data validation qualifications were applied during data validation and data are interpreted to be usable as reported by the laboratory.

Of the 40 individual PFAS results reported for this residential sampling event, a total of zero results were qualified as rejected (R) and were interpreted to be unusable for project objectives. This represents a PFAS data completeness of 100% for the February 2024 residential data set.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical methods. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative

* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS/LCSD
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

No data quality issues were identified, and results are interpreted to be usable as reported by the laboratory.

Reference:

WSP Environment & Infrastructure Solutions, Inc. (WSP), 2023. "Quality Program Plan – Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Former Loring Air Force Base, Limestone, Maine; September 2023.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4"; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2023. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples By LC-MS/MS; EPA 821-D-23-001. July 2023.

Data Validation: Gabrielle Davis



April 2, 2024

Reviewed by: Julie Ricardi



April 3, 2024

Table 1 – Summary of Samples and Analytical Methods

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2024 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C449535	RES07	LORNG_RES07_02162024	YKI774	2/16/2024	WP	N	40

Notes:
T = Total
N = Normal Field Sample
WP = Potable Water
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:4/2/24
Checked by: GTD
Date: 4/2/24

Table 2 - Summary of Analytical Results

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2024 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

			SDG	C449535	
			Location	RES07	
			Sample Date	2/16/2024	
			Sample ID	LORNG_RES07_02162024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	0.66	J
		Perfluoropentanoic acid (PFPeA)	NG/L	0.5	J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.1	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.44	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.8	
		Perfluorononanoic acid (PFNA)	NG/L	0.45	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.45	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.45	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.5	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	14	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.45	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	25	
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.85	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.43	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.45	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.3	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.5	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.45	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	54	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	28	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	28	U

Prepared by: AKN
Date: 4/2/24
Checked by: GTD
Date: 4/2/24

Table 3 - Acronyms and Abbreviations

Data Validation and Usability Report
Loring PFAS Remedial Investigation
February 2024 Residential Sampling
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
BV	Bureau Veritas
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RI	Remedial Investigation
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP Environment & Infrastructure

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: C4V9358

Chemical Analyses Performed by:

Bureau Veritas Canada

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: C4V9358
Laboratory: Bureau Veritas Canada
Site: Loring AFB
Sampling dates: 10/04/2024; 10/07/2024 – 10/08/2024
Number of Samples: 32
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_EB013_10042024	AFMU51	equipment blank	S2BVM
LORNG_EB014_10072024	AFMU52	equipment blank	S2BVM
LORNG_FMW3413_10072024	AFMU53	groundwater	S2BVM
LORNG_JBW7335A_10072024	AFMU54	groundwater	S2BVM
LORNG_JBW7335B_10072024	AFMU55	groundwater	S2BVM
LORNG_JBW7345B_10072024	AFMU62	groundwater	S2BVM
LORNG_JBW7912_150_10072024	AFMU63	groundwater	S2BVM
LORNG_JBW7912_46_10072024	AFMU64	groundwater	S2BVM
LORNG_JMW1762_10042024	AFMU65	groundwater	S2BVM
LORNG_JMW1982_10072024	AFMU66	groundwater	S2BVM
LORNG_OW20002_10042024	AFMU67	groundwater	S2BVM
LORNG_OW08001_10072024	AFMU68	groundwater	S2BVM
LORNG_AA18MW-02_10082024	AFMU69	groundwater	S2BVM
LORNG_BW20002_10082024	AFMU70	groundwater	S2BVM
LORNG_EB015_10072024	AFMU71	equipment blank	S2BVM
LORNG_JBW7326A_10082024	AFMU72	groundwater	S2BVM
LORNG_JBW7326B_10082024	AFMU73	groundwater	S2BVM
LORNG_JBW7403_10082024	AFMU74	groundwater	S2BVM
LORNG_JBW7714_10082024	AFMU75	groundwater	S2BVM
LORNG_JMW1960_10082024	AFMU76	groundwater	S2BVM
LORNG_JPZ7808_10082024	AFMU77	groundwater	S2BVM
LORNG_OW05004_10072024	AFMU78	groundwater	S2BVM
LORNG_OW20006_10082024	AFMU79	groundwater	S2BVM
LORNG_UNK-034_80_10082024	AFMU80	groundwater	S2BVM
LORNG_BW06008_10082024	AFMU81	groundwater	S2BVM
LORNG_EB016_10082024	AFMU82	equipment blank	S2BVM
LORNG_EB017_10082024	AFMU83	equipment blank	S2BVM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_JBW7314_10082024	AFMU84	groundwater	S2BVM
LORNG_JBW7737A_10082024	AFMU85	groundwater	S2BVM
LORNG_JBW7737A_10082024FD	AFMU86	groundwater	S2BVM
LORNG_JMW0682_10082024	AFMU87	groundwater	S2BVM
LORNG_UNK-044_10082024	AFMU88	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB013_10042024 was submitted as an equipment blank in association with samples LORNG_BW20002_10082024, LORNG_OW20002_10042024, and LORNG_JMW1762_10042024. No problems were found for this criterion.

Sample LORNG_EB014_10072024 was submitted as an equipment blank in association with samples LORNG_JBW7335A_10072024, LORNG_JBW7335B_10072024, and LORNG_JBW7345B_10072024. No problems were found for this criterion.

Sample LORNG_EB015_10072024 was submitted as an equipment blank in association with samples LORNG_FMW3413_10072024, LORNG_JBW7912_46_10072024, and LORNG_JBW7912_150_10072024. No problems were found for this criterion.

Sample LORNG_EB015_10072024 was submitted as an equipment blank. No problems were found for this criterion.

Sample LORNG_EB017_10082024 was submitted as an equipment blank in association with samples LORNG_JBW7403_10082024 and LORNG_JMW0682_10082024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for isotope dilution standards listed in the table below during the analyses of the listed samples indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

Sample	*Isotope Dilution Standard*
LORNG_JBW7912_46_10072024	*PFOSA*
LORNG_JMW1960_10082024	*PFOSA*
LORNG_JBW7345B_10072024	*PFOSA*
LORNG_JBW7314_10082024	*PFPeA*
LORNG_OW20006_10082024	*PFOSA*
LORNG_OW05004_10072024	*PFOSA*
LORNG_UNK-044_10082024	*PFOSA*
LORNG_JBW7335A_10072024	*PFOSA*
LORNG_JBW7737A_10082024	*PFOSA*
LORNG_AA18MW-02_10082024	*PFOSA*

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_OW08001_10072024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_JPZ7808_10082024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_OW05004_10072024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_JBW7737A_10082024 and LORNG_JBW7737A_10082024FD were submitted as a field duplicate pair in association with this SDG. Adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analytes in to the instruments linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_JBW7326A_10082024 was submitted for split sample analyses. The split sample results are located in SDG FC19573. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
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Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_JBW7737A_10082024	LORNG_JBW7737A_10082024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA	4.5	4.5	0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	0.43	0.53	20.8		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	7.9	7.7	2.6		
PFBSA	12	12	0.0		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	7.3	7.2	1.4		
PFHPSA	4.2	4	4.9		
PFHXA	28	27	3.6		
PFHXSA	75	74	1.3		
PFMBA			0.0		
PFMPA			0.0		
PFNA	0.55	0.57	3.6		
PFNSA			0.0		
PFOA	11	11	0.0		
PFOS	250	210	17.4		
PFPA	18	18	0.0		
PFPESA	12	12	0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/28/2025

Reviewed: 2/6/2025

Project: Loring AFB

SDG: C4V9358

LAB: Bureau Veritas Canada

Samples Collected: 10/04/2024; 10/07/2024 – 10/08/2024

32 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/10 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/04/2024; 10/07/2024 – 10/08/2024
Extracted 10/18; 10/20; 10/23; 10/25; 10/28
Analyzed 10/20; 10/22; 10/25; 10/26; 10/30 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All reported ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

Batch 9708948	ok
Batch 9712677	ok
Batch 9719756	ok
Batch 9725392	ok
Batch 9728787	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_OW08001_10072024	**AFMU68**	**MS/MSD**		
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				
LORNG_JPZ7808_10082024	**AFMU77**	**MS/MSD**		
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				
LORNG_OW05004_10072024	**AFMU78**	**MS/MSD**		
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB013_10042024
PFOA 0.56 J ng/L all results >LOQ and >5X blank; no action
Associated with samples
LORNG_BW20002_10082024
LORNG_OW20002_10042024
LORNG_JMW1762_10042024

LORNG_EB014_10072024
PFDOA 0.36 J ng/L all results ND; no action
PFHXSA 0.46 J ng/L all results >LOQ and >5X blank; no action
PFOA 0.27 J ng/L all results >LOQ and >5X blank; no action
PFOS 0.76 J ng/L all results >LOQ and >5X blank; no action
Associated with samples
LORNG_JBW7335A_10072024
LORNG_JBW7335B_10072024
LORNG_JBW7345B_10072024

LORNG_EB015_10072024 all ND
Associated with samples
LORNG_FMW3413_10072024
LORNG_JBW7912_46_10072024
LORNG_JBW7912_150_10072024

LORNG_EB016_10082024 all ND
Associated with sample JMW-0505 (no sample collected)

LORNG_EB017_10082024 all ND
Associated with samples
LORNG_JBW7403_10082024
LORNG_JMW0682_10082024
UNK-23001 (no sample collected)

Batch 9708948 all ND
Batch 9712677 all ND
Batch 9719756 all ND
Batch 9725392 all ND

All ICB/CCBs all ND <MDL

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X

- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument LCMS7

10/25/2024 all %RSD <20%

ICV
ISC
CCV

Samples 73,74,75,76,79

CCV

10/21/2024 all %RSD <20%

ICV
ISC
CCV

Samples 69,70,71

CCV

Sample 72

CCV

10/30/2024 all %RSD <20%

ICV
ISC
CCV

Samples 77,80,81,82

CCV

10/31/2024 all %RSD <20%

ICV
ISC
CCV

Samples 78,83,84,85,86,87

CCV

Samples 88

CCV

10/20/2024 all %RSD <20%

ICV
ISC
CCV

Samples 51,52,53,54,55,62,63

CCV

Samples 64,65,66,97,68

CCV

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

Ion ratios out for:

LORNG_JBW7912_46_10072024	FOSA	flag J
LORNG_JMW1960_10082024	FOSA	flag J
LORNG_JBW7345B_10072024	FOSA	flag J
LORNG_JBW7314_10082024	PFPA	flag J
LORNG_OW20006_10082024	FOSA	flag J
LORNG_OW05004_10072024	FOSA	flag J
LORNG_UNK-044_10082024	FOSA	flag J
LORNG_JBW7335A_10072024	FOSA	flag J

LORNG_JBW7737A_10082024	FOSA	flag J
LORNG_AA18MW-02_10082024	FOSA	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_JBW7737A_10082024 and LORNG_JBW7737A_10082024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

				SDG	C4V9358											
				Location	AA18MW-02	BW06008	BW20002	FIELDQC					FMW3413	JBW7314	JBW7326A	JBW7326B
				Sample Date	10/8/2024	10/8/2024	10/8/2024	10/4/2024	10/7/2024		10/8/2024		10/7/2024	10/8/2024	10/8/2024	10/8/2024
				Sample ID	LORNG_AA18MW-02_10082024	LORNG_BW06008_10082024	LORNG_BW20002_10082024	LORNG_EB013_10042024	LORNG_EB014_10072024	LORNG_EB015_10072024	LORNG_EB016_10082024	LORNG_EB017_10082024	LORNG_FMW3413_10072024	LORNG_JBW7314_10082024	LORNG_JBW7326A_10082024	LORNG_JBW7326B_10082024
				QC Code	N	N	N	EB	EB	EB	EB	EB	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.9 J	6.4	7.6	3.5 U	3.7 U	3.5 U	3.7 U	6.2 U	6.4 J	1.5 J	5.4 J	5.2 J
		Perfluoropentanoic acid (PFPeA)	NG/L	10	11	14	1.8 U	1.9 U	1.8 U	1.9 U	3.1 U	12	0.97 J	8.6	7.1
		Perfluorohexanoic acid (PFHxA)	NG/L	7	9.3	13	0.64 U	0.68 U	0.64 U	0.67 U	1.6 U	8.6	0.7 J	7.1	6
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.5	7.9	12	0.89 U	0.93 U	0.88 U	0.93 U	1.6 U	7.9	0.43 J	4.1	3.5
		Perfluorooctanoic acid (PFOA)	NG/L	3.1	5.8	14	0.56 J	0.27 J	0.88 U	0.93 U	1.6 U	6	0.96 J	5.6	5.7
		Perfluorononanoic acid (PFNA)	NG/L	0.62 U	1.4 J	1.1 J	0.64 U	0.68 U	0.64 U	0.67 U	1.6 U	1.1 J	1.6 U	0.46 J	0.4 J
		Perfluorodecanoic acid (PFDA)	NG/L	0.85 U	0.82 U	0.9 U	0.89 U	0.93 U	0.88 U	0.93 U	1.6 U	0.94 U	1.6 U	0.86 U	0.83 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.85 U	0.82 U	0.9 U	0.89 U	0.36 J	0.88 U	0.93 U	1.6 U	0.94 U	1.6 U	0.86 U	0.83 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.85 U	0.82 U	0.9 U	0.89 U	0.93 U	0.88 U	0.93 U	1.6 U	0.94 U	1.6 U	0.86 U	0.83 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1 J	0.93 J	2.7	0.56 U	0.59 U	0.56 U	0.59 U	1.4 U	1.4 J	0.44 J	2.2	2
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.88 J	1.1 J	3.3	0.6 U	0.64 U	0.6 U	0.63 U	1.5 U	1.5 J	0.25 J	2.7	2.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	11	11	60	0.84 U	0.46 J	0.83 U	0.87 U	1.5 U	18	2.1	33	34
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.58 U	0.42 J	0.88 J	0.6 U	0.64 U	0.6 U	0.63 U	1.5 U	0.34 J	1.5 U	0.7 J	0.61 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6.4	21	45	1.2 U	0.76 J	1.2 U	1.3 U	1.5 U	20	3.2	32	27
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2 U	1.1 U	1.2 U	1.2 U	1.3 U	1.2 U	1.3 U	1.5 U	1.3 U	1.5 U	1.2 U	1.1 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2 U	1.1 U	1.2 U	1.2 U	1.3 U	1.2 U	1.3 U	1.5 U	1.3 U	1.5 U	1.2 U	1.1 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.85 U	0.82 U	0.9 U	0.89 U	0.93 U	0.88 U	0.93 U	1.6 U	0.94 U	1.6 U	0.86 U	0.83 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.2 U	3.1 U	3.4 U	3.3 U	3.5 U	3.3 U	3.5 U	5.8 U	3.5 U	6.2 U	3.2 U	3.1 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.3 U	3.2 U	3.5 U	3.4 U	3.6 U	3.4 U	3.6 U	5.9 U	3.6 U	6.3 U	3.3 U	3.2 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.7 U	4.6 U	5 U	4.9 U	5.2 U	4.9 U	5.2 U	5.9 U	5.2 U	6.3 U	4.8 U	4.6 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.34 J	0.6 U	0.65 U	0.64 U	0.68 U	0.64 U	0.67 U	1.6 U	0.68 U	1.6 U	0.79 J	0.6 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.85 U	0.82 U	0.9 U	0.89 U	0.93 U	0.88 U	0.93 U	1.6 U	0.94 U	1.6 U	0.86 U	0.83 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	8.5 U	8.2 U	9 U	8.9 U	9.3 U	8.8 U	9.3 U	16 U	9.4 U	16 U	8.6 U	8.3 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	8.5 U	8.2 U	9 U	8.9 U	9.3 U	8.8 U	9.3 U	16 U	9.4 U	16 U	8.6 U	8.3 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.4 U	3.3 U	3.6 U	3.5 U	3.7 U	3.5 U	3.7 U	6.2 U	3.7 U	6.6 U	3.4 U	3.3 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.2 U	3.1 U	3.4 U	3.3 U	3.5 U	3.3 U	3.5 U	5.8 U	3.5 U	6.2 U	3.2 U	3.1 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.9 U	2.8 U	3.1 U	3 U	3.2 U	3 U	3.2 U	3.1 U	3.2 U	3.3 U	2.9 U	2.8 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	3.1 U	1.4 U	3.3 U	1.3 U	1.2 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	25 U	24 U	27 U	26 U	28 U	26 U	27 U	68 U	28 U	72 U	25 U	25 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.2 U	3.1 U	3.4 U	3.3 U	3.5 U	3.3 U	3.5 U	12 U	3.5 U	12 U	3.2 U	3.1 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.3 U	2.2 U	2.5 U	2.4 U	2.5 U	2.4 U	2.5 U	12 U	2.6 U	12 U	2.3 U	2.3 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1 U	2.1 U	2.2 U	2.2 U	2.3 U	2.2 U	2.3 U	5.4 U	2.4 U	5.8 U	2.1 U	2.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.2 U	6 U	6.5 U	6.4 U	6.8 U	6.4 U	6.7 U	16 U	6.8 U	16 U	6.2 U	6 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31 U	30 U	33 U	32 U	34 U	32 U	34 U	39 U	34 U	41 U	31 U	30 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31 U	30 U	33 U	32 U	34 U	32 U	34 U	39 U	34 U	41 U	31 U	30 U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/25/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4V9358							
			Location	JMW1982	JPZ7808	OW05004	OW08001	OW20002	OW20006	UNK-034	UNK-044
			Sample Date	10/7/2024	10/8/2024	10/7/2024	10/7/2024	10/4/2024	10/8/2024	10/8/2024	10/8/2024
			Sample ID	LORNG_JMW1982_10072024	LORNG_JPZ7808_10082024	LORNG_OW05004_10072024	LORNG_OW08001_10072024	LORNG_OW20002_10042024	LORNG_OW20006_10082024	LORNG_UNK-034_80_10082024	LORNG_UNK-044_10082024
			QC Code	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	23	1.8 J	8.7	40	3.7 J	11	3.4 U	3.8 J
		Perfluoropentanoic acid (PFPeA)	NG/L	63	1.7 U	15	140	5.3	22	1 J	3.8
		Perfluorohexanoic acid (PFHxA)	NG/L	170	0.38 J	9.6	130	4.1	21	1.4 J	39
		Perfluoroheptanoic acid (PFHpA)	NG/L	42	0.28 J	12	54	3.1	22	0.56 J	6.2
		Perfluorooctanoic acid (PFOA)	NG/L	180	1 J	7.5	130	3.5	23	1.4 J	61
		Perfluorononanoic acid (PFNA)	NG/L	6.4	0.6 U	1.3 J	6.1	0.31 J	2.5	0.62 U	1.5
		Perfluorodecanoic acid (PFDA)	NG/L	0.62 J	0.82 U	1.7 U	0.42 J	0.9 U	0.88 U	0.85 U	1.5 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.3 U	1.2 U	1.7 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.91 U	0.82 U	1.7 U	0.89 U	0.9 U	0.88 U	0.85 U	1.5 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.3 U	1.2 U	1.7 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.91 U	0.82 U	1.7 U	0.89 U	0.9 U	0.88 U	0.85 U	1.5 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	22	0.5 J	3.9	22	1.2 J	3.7	0.77 J	2.3
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	32	0.34 J	4.5	34	1.1 J	5.3	0.78 J	3
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	770	7.1	39	500	18	110	4.8	140
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	20	0.56 U	1.2 J	9.6	0.32 J	1.9	0.58 U	1.1 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1200	2.1	61	430	12	130	9	31
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2 U	1.1 U	1.6 U	1.2 U	1.2 U	1.2 U	1.2 U	1.4 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2 U	1.1 U	1.6 U	1.2 U	1.2 U	1.2 U	1.2 U	1.4 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.91 U	0.82 U	1.7 U	0.89 U	0.9 U	0.88 U	0.85 U	1.5 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.4 U	3.1 U	6.3 U	3.3 U	3.4 U	3.3 U	3.2 U	5.7 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	16	3.2 U	1.7 J	23	3.5 U	3.4 U	13	5.8 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	6.5	4.6 U	6.4 U	1.9 J	5 U	4.9 U	4.7 U	5.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	26	0.6 U	1.4 J	7.1	0.66 U	1 J	0.45 J	0.32 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3 U	1.2 U	1.7 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3 U	1.2 U	1.7 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.3 U	1.2 U	1.7 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.91 U	0.82 U	1.7 U	0.89 U	0.9 U	0.88 U	0.85 U	1.5 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	9.1 U	8.2 U	17 U	8.9 U	9 U	8.8 U	8.5 U	15 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	9.1 U	8.2 U	17 U	8.9 U	9 U	8.8 U	8.5 U	15 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6 U	3.3 U	6.7 U	3.5 U	3.6 U	3.5 U	3.4 U	6.1 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.4 U	3.1 U	6.3 U	3.3 U	3.4 U	3.3 U	3.2 U	5.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	3.1 U	2.8 U	3.3 U	3 U	3.1 U	3 U	2.9 U	3 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.3 U	1.2 U	3.3 U	1.3 U	1.3 U	1.3 U	1.3 U	3 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	27 U	24 U	73 U	26 U	27 U	26 U	25 U	66 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.4 U	3.1 U	13 U	3.3 U	3.4 U	3.3 U	3.2 U	11 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.5 U	2.2 U	13 U	2.4 U	2.5 U	2.4 U	2.3 U	11 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.3 U	2.1 U	5.9 U	2.2 U	2.3 U	2.2 U	2.1 U	5.3 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.6 U	6 U	17 U	6.5 U	6.6 U	6.4 U	6.2 U	15 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	33 U	30 U	42 U	32 U	33 U	32 U	31 U	38 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	33 U	30 U	42 U	32 U	33 U	32 U	31 U	38 U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/25/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C4V9358	E1633DR	T	AFMU69	LORNG_AA18MW-02_10082024	Perfluorooctane sulfonamide (PFOSA)	0.34	J	0.34	J	IAG	NG/L
			AFMU84	LORNG_JBW7314_10082024	Perfluoropentanoic acid (PFPeA)	0.97	J	0.97	J	IAG	NG/L
			AFMU54	LORNG_JBW7335A_10072024	Perfluorooctane sulfonamide (PFOSA)	1	J	1	J	IAG	NG/L
			AFMU62	LORNG_JBW7345B_10072024	Perfluorooctane sulfonamide (PFOSA)	0.79	J	0.79	J	IAG	NG/L
			AFMU85	LORNG_JBW7737A_10082024	Perfluorooctane sulfonamide (PFOSA)	0.43	J	0.43	J	IAG	NG/L
			AFMU64	LORNG_JBW7912_46_10072024	Perfluorooctane sulfonamide (PFOSA)	0.24	J	0.24	J	IAG	NG/L
			AFMU76	LORNG_JMW1960_10082024	Perfluorooctane sulfonamide (PFOSA)	6.5		6.5	J	IAG	NG/L
			AFMU78	LORNG_OW05004_10072024	Perfluorooctane sulfonamide (PFOSA)	1.4	J	1.4	J	IAG	NG/L
			AFMU79	LORNG_OW20006_10082024	Perfluorooctane sulfonamide (PFOSA)	1	J	1	J	IAG	NG/L
			AFMU88	LORNG_UNK-044_10082024	Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	J	IAG	NG/L

Prepared by:AKN
Date:2/13/25
Checked by:TC for EDS Validation Contractor
Date:2/25/25

DATA VALIDATION REPORT

Loring AFB

SDG: C4V9659

Chemical Analyses Performed by:

Bureau Veritas Canada

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: C4V9659
Laboratory: Bureau Veritas Canada
Site: Loring AFB
Sampling dates: 10/01/2024 – 10/02/2024
Number of Samples: 23
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_SB01047_0-1_10012024	AFNJ80	soil	S2BVM
LORNG_SB01047_0-1_10012024FD	AFNJ81	soil	S2BVM
LORNG_SB01048_0-1_10012024	AFNJ83	soil	S2BVM
LORNG_SB01050_0-1_10012024	AFNJ85	soil	S2BVM
LORNG_SB01053_0-1_10012024	AFNJ86	soil	S2BVM
LORNG_SB01055_0-2_10012024	AFNJ87	soil	S2BVM
LORNG_SB01055_13-15_10012024	AFNJ89	soil	S2BVM
LORNG_SB01055_7-9_10012024	AFNJ90	soil	S2BVM
LORNG_SB05041_0-2_10012024	AFNJ91	soil	S2BVM
LORNG_SB05041_5-7_10012024	AFNJ92	soil	S2BVM
LORNG_SB12025_0-2_10012024	AFNJ93	soil	S2BVM
LORNG_SB12025_13-15_10012024	AFNJ94	soil	S2BVM
LORNG_SB01043_0-1_10012024	AFNJ95	soil	S2BVM
LORNG_SB01049_0-1_10022024	AFNJ96	soil	S2BVM
LORNG_SB01049_11-13_10022024	AFNJ97	soil	S2BVM
LORNG_SB01049_6-8_10022024	AFNJ98	soil	S2BVM
LORNG_SB01051_0-1_10022024	AFNJ99	soil	S2BVM
LORNG_SB01051_4-6_10022024	AFNK00	soil	S2BVM
LORNG_SB01051_8-10_10022024	AFNK01	soil	S2BVM
LORNG_SB01052_0-1_10022024	AFNK02	soil	S2BVM
LORNG_SB01052_3-5_10022024	AFNK03	soil	S2BVM
LORNG_SB01052_3-5_10022024FD	AFNK04	soil	S2BVM
LORNG_SB01052_7-9_10022024	AFNK05	soil	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion with the following exceptions. PFHxSA was positively identified in the method blanks associated with the reported samples listed in the table below. Positive results reported for the impacted analyte in the associated samples have been evaluated and qualified as appropriate per validation guidance.

LORNG_SB01043_0-1_10012024	*LORNG_SB12025_0-2_10012024*
LORNG_SB01048_0-1_10012024	*LORNG_SB12025_13-15_10012024*
LORNG_SB01053_0-1_10012024	*LORNG_SB01051_0-1_10022024*
LORNG_SB01055_0-2_10012024	*LORNG_SB01049_11-13_10022024*
LORNG_SB01055_7-9_10012024	*LORNG_SB01052_3-5_10022024*
LORNG_SB05041_5-7_10012024	*LORNG_SB01052_7-9_10022024*

B) Instrument blank contamination:

No problems were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB105_10012024, located in sample delivery group (SDG) FC19378, was submitted as an equipment blank in association with the samples collected on 10/01/2024. No problems were found for this criterion.

Sample LORNG_EB106_10022024, located in SDG FC19378, was submitted as an equipment blank in association with the samples collected on 10/02/2024. No problems were found for this criterion with the following exceptions. FOSA and PFOS were positively identified. Positive results reported for the impacted analytes in the associated samples have been evaluated and qualified as appropriate per validation guidance.

WSP reviewed qualifiers added to soil results by EDS due to low level EB contamination. Region 1 guidance was used and professional judgment was made by WSP to not qualify the detections in the soil samples as not detected (U) from the low level detections reported in the Equipment Blanks. The soil detections for PFOSA were less than the LOQ and were reported by the laboratory as estimated (J). The (J) qualifier was retained during validation and a reason code added of EBL to alert the end user that the soil result is associated with an equipment blank that had low level detections.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion with the following exception. The observed recovery for isotope dilution standard D9-EtFOSE was less than the lowest acceptance limit during the analysis of sample LORNG_SB01043_0-1_10012024. The result reported for the associated target analyte has been qualified "UJ" on this basis.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for isotope dilution standards listed in the table below during the analyses of the listed samples indicating some degree of uncertainty in the qualitative identification of the analyte. The results reported for the impacted analytes have been qualified "J" on this basis.

Sample	*Isotope Dilution Standard*
LORNG_SB01049_0-1_10022024	*PFPeA*
LORNG_SB01049_6-8_10022024	*PFPeA*
LORNG_SB01043_0-1_10012024	*PFOA, PFUnA*
LORNG_SB01047_0-1_10012024FD	*PFUnA*
LORNG_SB01047_0-1_10012024	*PFUnA*
LORNG_SB01050_0-1_10012024	*PFUnA*
LORNG_SB01053_0-1_10012024	*PFDoA, PFDS, PFNS*
LORNG_SB05041_0-2_10012024	*PFPeA*

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_SB01050_0-1_10012024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_SB01047_0-1_10012024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_SB01048_0-1_10012024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_SB01053_0-1_10012024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_SB01047_0-1_10012024 and LORNG_SB01047_0-1_10012024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB01052_3-5_10022024 and LORNG_SB01052_3-5_10022024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems requiring qualification of sample results were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analytes in to the instruments linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_SB01049_0-1_10022024 was submitted for split sample analyses. The split sample results are located in SDG C4V7278. Adequate precision was demonstrated.

Please note sample LORNG_SB01051_0-1_10022024 was submitted for split sample analyses. The split sample results are located in SDG C4V7278. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks			x
Instrument Blanks	x		
Field Blanks			x
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards			x
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_SB01047_0-1_10012024	LORNG_SB01047_0-1_10012024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	0.000075	0.000086	13.7		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	0.00079	0.001	23.5		
PFBSA	0.00036	0.00038	5.4		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	0.00091	0.00093	2.2		
PFHPSA	0.00037	0.00036	2.7		
PFHXA	0.0034	0.0033	3.0		
PFHXSA	0.01	0.01	0.0		
PFMBA			0.0		
PFMPA			0.0		
PFNA	0.00024	0.00026	8.0		
PFNSA			0.0		
PFOA	0.0025	0.0026	3.9		
PFOS	0.024	0.023	4.3		
PFPA	0.0013	0.0014	7.4		
PFPESA	0.00045	0.00044	2.2		
PFTEA	0	0.000074	200.0	0.00031	ok
PFTRIA	0.000034	0.000096	95.4	0.00031	ok
PFUNA	0.000075	0.000094	22.5		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_SB01052_3-5_10022024	LORNG_SB01052_3-5_10022024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA	0.00075	0.00049	41.9	0.00086	ok
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	0.00033	0.00036	8.7		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA			0.0		
PFBSA			0.0		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA	0.00007	0.000065	7.4		
PFEESA			0.0		
PFHPA	0.000049	0.000053	7.8		
PFHPSA			0.0		
PFHXA	0.00004	0.00004	0.0		
PFHXSA	0.00017	0.00011	42.9	0.0002	ok
PFMBA			0.0		
PFMPA			0.0		
PFNA	0.000046	0.000045	2.2		
PFNSA			0.0		
PFOA	0.000056	0.000062	10.2		
PFOS	0.0016	0.0018	11.8		
PFPA	0.000094	0.0001	6.2		
PFPESA			0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/27/2025

Reviewed: 2/6/2025

Project: Loring AFB

SDG: C4V9659

LAB: Bureau Veritas Canada

Samples Collected: 10/01/2024 – 10/02/2024

23 solid

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/10 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/01/2024 – 10/02/2024
Extracted 10/22/2024; 10/23/2024; and 10/28/2024
Analyzed 10/25/2024; 10/27/2024; and 10/31/2024

All ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

AFNJ80		
13C2 4:2 FTS ↑	4:2 FTS	ND; no action
13C2 6:2 FTS ↑	6:2 FTS	ND; no action
13C2 8:2 FTS ↑	8:2 FTS	ND; no action
AFNJ85		
13C2 4:2 FTS ↑	4:2 FTS	ND; no action
13C2 6:2 FTS ↑	6:2 FTS	ND; no action
13C2 8:2 FTS ↑	8:2 FTS	ND; no action
AFNJ95	LORNG_SB01043_0-1_10012024	
D9-EtFOSE ↓	EtFOSE	flag UJ

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.

- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

Batch 6716762	ok
Batch 9719547	ok
Batch 9728816	ok
Batch 9734642	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

AFNJ85	**LORNG_SB01050_0-1_10012024**		**MS/MSD**	
Analyte	**MS**	**MSD**	**RPD**	**Flag**
PFDoDS	↓	**ok**	**ok**	**inconclusive; no action**

LORNG_SB01047_0-1_10012024		**AFNJ80**	**MSMSD**	
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				

LORNG_SB01048_0-1_10012024		**AFNJ83**	**MS/MSD**	
Analyte	**MS**	**MSD**	**RPD**	**Flag**
7:3FTCA	**ok**	↑	**out**	**ND; no action**
5:3FTCA	**ok**	**ok**	**out**	**ND; no action**

LORNG_SB01053_0-1_10012024		**AFNJ86**	**MS/MSD**	
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

COMPARED ON COLUMN RESULTS IF EVALUATING FOR 2X-5X BLANK

LORNG_EB106_10022024
associated with samples collected on 10/02/2024

FOSA 0.87 J ng/L <LOQ (0.09 µg/L on column) ≈ 0.000016 mg/kg x2= 0.000032
X5 = 0.00008
PFOS 1.3 J ng/L <LOQ (0.14 µg/L on column) ≈ 0.000024889 mg/kg x2 = 0.000049778
X5 = 0.0001244
Using a 4.5 g to 0.8 ml prep for solid samples
Samples qualified per table above

LORNG_EB105_10012024
associated with samples collected on 10/01/2024
ND

Batch 6716762 all ND
Batch 9734642 all ND

Batch 9719547
PFHxS 0.000025 J <LOQ mg/kg
Associated with samples
AFNJ83
AFNJ86
AFNJ87
AFNJ90
AFNJ92
AFNJ93
AFNJ94
AFNJ95
Reported sample qualified per table above
LORNG_SB01043_0-1_10012024
LORNG_SB01048_0-1_10012024
LORNG_SB01053_0-1_10012024
LORNG_SB01055_0-2_10012024
LORNG_SB01055_7-9_10012024
LORNG_SB05041_5-7_10012024
LORNG_SB12025_0-2_10012024
LORNG_SB12025_13-15_10012024

Batch 9728816
PFHxS 0.000082 J <LOQ mg/kg
Associated with samples
AFNJ83
AFNJ86
AFNJ95
AFNJ96
AFNJ97
AFNJ99
AFNK03
AFNK05
Reported samples qualified per table above
LORNG_SB01051_0-1_10022024
LORNG_SB01049_11-13_10022024

LORNG_SB01052_3-5_10022024
LORNG_SB01052_7-9_10022024

All ICB/CCBs all ND <MDL

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.

- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument nont-lcms7

10/22/2024 all %RSD <20%
9716762
ICV
ISC

CCV

Sample AFNJ81,85,89,91,98,500,k01,k02,k04

CCV

10/23/2024 all %RSD <20%
9719547
ICV
ISC

CCV

Sample AFNJ83,86,87,90,92,93,94,95

CCV

10/28/2024 all %RSD <20%
9734642
ICV
ISC

CCV

Sample AFNJ80,81,85

CCV

Instrument lcms5

10/28/2024 all %RSD <20%
9728816
ICV
ISC

CCV

Sample AFNJ83,86,95,96,97,99

Samples AFNK02,05

CCV

Instrument nont-lcms7

10/28/2024 all %RSD <20%
9737122

ICV
ISC

CCV

Sample AFNJ97,99

CCV

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_SB01049_0-1_10022024	AFNJ96	PFPeA
LORNG_SB01049_6-8_10022024	AFNJ98	PFPeA
LORNG_SB01043_0-1_10012024	AFNJ95	PFOA
LORNG_SB01043_0-1_10012024	AFNJ95	PFUNA
LORNG_SB01047_0-1_10012024FD	AFNJ81	PFUNA
LORNG_SB01047_0-1_10012024	AFNJ80	PFUnA
LORNG_SB01050_0-1_10012024	AFNJ85	PFUnA
LORNG_SB01053_0-1_10012024	AFNJ86	PFDoA
LORNG_SB01053_0-1_10012024	AFNJ86	PFDS
LORNG_SB01053_0-1_10012024	AFNJ86	PFNS
LORNG_SB05041_0-2_10012024	AFNJ91	PFPeA

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria

- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_SB01047_0-1_10012024 and LORNG_SB01047_0-1_10012024FD	all ok
LORNG_SB01052_3-5_10022024 and LORNG_SB01052_3-5_10022024FD	all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG	C4V9659																			
		Location	SB01043		SB01047			SB01048	SB01049				SB01050	SB01051				SB01052				
		Sample Date	10/1/2024		10/1/2024			10/1/2024	10/2/2024				10/1/2024	10/2/2024				10/2/2024				
		Sample ID	LORNG_SB01043_0-1_10012024_BV		LORNG_SB01047_0-1_10012024		LORNG_SB01047_0-1_10012024FD	LORNG_SB01048_0-1_10012024	LORNG_SB01049_0-1_10022024		LORNG_SB01049_6-8_10022024		LORNG_SB01049_11-13_10022024	LORNG_SB01050_0-1_10012024		LORNG_SB01051_0-1_10022024		LORNG_SB01051_4-6_10022024		LORNG_SB01051_8-10_10022024		LORNG_SB01052_0-1_10022024		LORNG_SB01052_3-5_10022024	
		QC Code	N		N		FD	N	N		N		N	N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00069	U	0.00079	J	0.001	J	0.0013	J	0.0005	U	0.0005	U	0.00052	U	0.00035	J	0.00029	J	0.00052	U	0.0005	U	0.00052	U	0.00049	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00019	U	0.0013		0.0014		0.0024		0.000041	J	0.000041	J	0.00014	U	0.0002	J	0.00044		0.00014	U	0.00014	U	0.000062	J	0.000094	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00013	U	0.0034		0.0033		0.0072		0.00009	U	0.000092	U	0.000094	U	0.00026	J	0.00043		0.000094	U	0.000092	U	0.000075	J	0.00004	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0001	J	0.00091		0.00093		0.0024		0.00012	U	0.00013	U	0.00013	U	0.00023	J	0.0004		0.00013	U	0.00013	U	0.0001	J	0.000049	J
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00036	J	0.0025		0.0026		0.0097		0.00012	U	0.00013	U	0.00013	U	0.00041		0.00075		0.000054	J	0.00013	U	0.00013	J	0.000056	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.00015	J	0.00024	J	0.00026	U	0.0005		0.00012	U	0.00013	U	0.00013	U	0.00021	J	0.00039		0.00013	U	0.00013	U	0.000054	J	0.000046	J
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00017	J	0.00027	U	0.00028	U	0.00029	U	0.0002	U	0.00021	U	0.00021	U	0.00025	U	0.00011	J	0.00021	U	0.00021	U	0.00021	U	0.0002	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00034	J	0.000075	J	0.000094	J	0.00013	U	0.00009	U	0.000092	U	0.000073	J	0.000062	J	0.000098	J	0.000094	U	0.000092	U	0.000059	J	0.000089	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0001	J	0.00017	U	0.00017	U	0.00018	U	0.00012	U	0.00013	U	0.00013	U	0.00015	U	0.00012	U	0.00013	U	0.00013	U	0.00013	U	0.00012	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00014	J	0.000034	J	0.000096	J	0.000092	U	0.000068	U	0.000069	U	0.000032	J	0.000029	J	0.000066	U	0.000071	U	0.000069	U	0.000071	U	0.000067	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000038	J	0.000091	U	0.000074	J	0.000092	U	0.000068	U	0.000069	U	0.00007	U	0.000082	U	0.000066	U	0.000071	U	0.000069	U	0.000071	U	0.000067	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00011	U	0.00036		0.00038		0.00027	J	0.00008	U	0.000081	U	0.000083	U	0.00007	J	0.000033	J	0.000084	U	0.000081	U	0.000084	U	0.000079	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00012	U	0.00045		0.00044		0.00016	J	0.000085	U	0.000086	U	0.000088	U	0.00004	J	0.000037	J	0.000088	U	0.000086	U	0.000088	U	0.000084	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00051		0.01		0.01		0.0088		0.000082	U	0.000056	J	0.000086	U	0.0011		0.002		0.00056		0.00035		0.00018	J	0.000023	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00017	U	0.00037		0.00036		0.0003	J	0.00012	U	0.00013	U	0.00013	U	0.00015	U	0.00007	J	0.00013	U	0.00013	U	0.00013	U	0.00012	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0071		0.024		0.023		0.058		0.00056		0.00015	J	0.0007		0.002		0.008		0.0025		0.0016		0.0017		0.0016	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00017	U	0.00017	U	0.00017	U	0.00018	U	0.00012	U	0.00013	U	0.00013	U	0.00015	U	0.00017	J	0.00013	U	0.00013	U	0.000087	J	0.00012	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00017	U	0.00017	U	0.00017	U	0.00018	U	0.00012	U	0.00013	U	0.00013	U	0.00015	U	0.00012	J	0.00013	U	0.00013	U	0.000071	J	0.00007	J
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00028	U	0.00027	U	0.00028	U	0.00029	U	0.0002	U	0.00021	U	0.00021	U	0.00025	U	0.0002	U	0.00021	U	0.00021	U	0.00021	U	0.0002	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00065	U	0.0006	U	0.00063	U	0.00066	U	0.00046	U	0.00047	U	0.00048	U	0.00054	U	0.00045	U	0.00048	U	0.00047	U	0.00048	U	0.00046	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00066	U	0.00061	U	0.00065	U	0.00068	U	0.00047	U	0.00048	U	0.00049	U	0.00055	U	0.00046	U	0.0005	U	0.00048	U	0.00049	U	0.00047	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0011	U	0.001	U	0.0011	U	0.0011	U	0.00078	U	0.00079	U	0.00081	U	0.00091	U	0.00057	J	0.00081	U	0.00079	U	0.00051	J	0.00075	J
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00012	U	0.000075	J	0.000086	J	0.00077		0.00009	U	0.000092	U	0.000094	U	0.00011	U	0.00036		0.00005	J	0.000063	J	0.000099	J	0.00033	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00027	U	0.00027	U	0.00028	U	0.00028	U	0.0002	U	0.00021	U	0.00021	U	0.00025	U	0.0002	U	0.00021	U	0.00021	U	0.00021	U	0.0002	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00017	U	0.00017	U	0.00016	U	0.00017	U	0.00012	U	0.00013	U	0.00013	U	0.00015	U	0.00012	U	0.00013	U	0.00013	U	0.00013	U	0.00012	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00027	U	0.00026	U	0.00028	U	0.00029	U	0.0002	U	0.00021	U	0.00021	U	0.00025	U	0.0002	U	0.00021	U	0.00021	U	0.00021	U	0.0002	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00027	U	0.00026	U	0.00028	U	0.00029	U	0.0002	U	0.00021	U	0.00021	U	0.00024	U	0.0002	U	0.00021	U	0.00021	U	0.00021	U	0.0002	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.00091	U	0.00091	U	0.00093	U	0.00092	U	0.00068	U	0.00069	U	0.0007	U	0.00082	U	0.00066	U	0.00071	U	0.00069	U	0.00071	U	0.00067	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.00061	UJ	0.0006	U	0.00062	U	0.00062	U	0.00045	U	0.00046	U	0.00047	U	0.00055	U	0.00044	U	0.00047	U	0.00046	U	0.00047	U	0.00045	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00069	U	0.00067	U	0.00068	U	0.00071	U	0.0005	U	0.0005	U	0.00052	U	0.0006	U	0.00049	U	0.00052	U	0.0005	U	0.00052	U	0.00049	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00047	U	0.00045	U	0.00046	U	0.00048	U	0.00034	U	0.00034	U	0.00035	U	0.00041	U	0.00033	U	0.00035	U	0.00034	U	0.00035	U	0.00034	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00057	U	0.00054	U	0.00056	U	0.00058	U	0.00041	U	0.00041	U	0.00042	U	0.00049	U	0.0004	U	0.00042	U	0.00041	U	0.00042	U	0.0004	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00025	U	0.00024	U	0.00025	U	0.00026	U	0.00018	U	0.00018	U	0.00019	U	0.00022	U	0.00018	U	0.00019	U	0.00018	U	0.00019	U	0.00018	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0057	U	0.0054	U	0.0056	U	0.0058	U	0.0041	U	0.0041	U	0.0042	U	0.0049	U	0.004	U	0.0042	U	0.0041	U	0.0042	U	0.004	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00065	U	0.00062	U	0.00063	U	0.00066	U	0.00046	U	0.00047	U	0.00048	U	0.00056	U	0.00045	U	0.00048	U	0.00047	U	0.00048	U	0.00046	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00066	U	0.00064	U	0.00065	U	0.00068	U	0.00047	U	0.00048	U	0.00049	U	0.00057	U	0.00046	U	0.0005	U	0.00048	U	0.00049	U	0.00047	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00032	U	0.0003	U	0.00031	U	0.00032	U	0.00023	U	0.00023	U	0.00023	U	0.00027	U	0.00022	U	0.00024	U	0.00023	U	0.00024	U	0.00022	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00047	U	0.00045	U	0.00046	U	0.00048	U	0.00034	U	0.00034	U	0.00035	U	0.00041	U	0.00033	U	0.00035	U	0.00034	U	0.00035	U	0.00034	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0071	U	0.0068	U	0.007	U	0.0073	U	0.0051	U	0.0052	U	0.0053	U	0.0061	U	0.005	U	0.0053	U	0.0051	U	0.0053	U	0.005	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0071	U	0.0068	U	0.007	U	0.0073	U	0.0051	U	0.0052	U	0.0053	U	0.0061	U	0.005	U	0.0053	U	0.0051	U	0.0053	U	0.005	U

Prepared by: AKN
Date: 2/13/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		C4V9659													
		Location		SB01052		SB01053		SB01055				SB05041		SB12025			
		Sample Date		10/2/2024		10/1/2024		10/1/2024				10/1/2024		10/1/2024			
		Sample ID		LORNG_SB01052_3-5_10022024FD		LORNG_SB01052_7-9_10022024		LORNG_SB01053_0-1_10012024		LORNG_SB01055_0-2_10012024		LORNG_SB01055_7-9_10012024		LORNG_SB01055_13-15_10012024		LORNG_SB05041_0-2_10012024		LORNG_SB05041_5-7_10012024		LORNG_SB12025_0-2_10012024		LORNG_SB12025_13-15_10012024	
		QC Code		FD		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00049	U	0.00053	U	0.0044		0.00055	U	0.00053	U	0.00053	U	0.00055	U	0.00049	U	0.00049	U	0.00052	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0001	J	0.00034	J	0.0035		0.000057	J	0.00014	U	0.00014	U	0.000043	J	0.00013	U	0.00013	U	0.00014	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00004	J	0.00021	J	0.0047		0.0001	J	0.000096	U	0.000096	U	0.0001	U	0.000089	U	0.000089	U	0.000094	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.000053	J	0.00014	J	0.0023		0.000076	J	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.00012	U	0.00013	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.000062	J	0.000094	J	0.0037		0.00013	J	0.00013	U	0.00013	U	0.000087	J	0.00012	U	0.00012	U	0.00013	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.000045	J	0.000053	J	0.0017		0.0001	J	0.00013	U	0.00013	U	0.000071	J	0.00012	U	0.00012	U	0.00013	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0002	U	0.00022	U	0.00081		0.00022	U	0.00022	U	0.00022	U	0.00022	U	0.0002	U	0.0002	U	0.00021	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00009	U	0.000048	J	0.00027	J	0.000054	J	0.000096	U	0.000096	U	0.000061	J	0.000089	U	0.000071	J	0.000094	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00012	U	0.00013	U	0.000067	J	0.00014	U	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.000044	J	0.00013	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000067	U	0.000072	U	0.0001	U	0.000075	U	0.000072	U	0.000072	U	0.000075	U	0.000067	U	0.000049	J	0.000071	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000067	U	0.000072	U	0.0001	U	0.000075	U	0.000072	U	0.000072	U	0.000075	U	0.000067	U	0.000024	J	0.000071	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00008	U	0.000085	U	0.00022	J	0.000088	U	0.000085	U	0.000085	U	0.00003	J	0.000079	U	0.000079	U	0.000083	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000084	U	0.00009	U	0.00023	J	0.000093	U	0.00009	U	0.00009	U	0.000094	U	0.000083	U	0.000083	U	0.000088	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00011	J	0.00036		0.013		0.00017	U	0.000087	U	0.000087	U	0.00012	J	0.000081	U	0.000081	U	0.00011	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00012	U	0.00013	U	0.00018	J	0.00014	U	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.00012	U	0.00013	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0018		0.002		0.054		0.00063		0.0002	U	0.0002	U	0.00091		0.000059	J	0.00069		0.00096	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00012	U	0.00013	U	0.00018	J	0.00014	U	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.00012	U	0.00013	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.000065	J	0.00037		0.0001	J	0.00014	U	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.00012	U	0.00013	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0002	U	0.00022	U	0.0003	U	0.00022	U	0.00022	U	0.00022	U	0.00022	U	0.0002	U	0.0002	U	0.00021	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00046	U	0.00049	U	0.00069	U	0.00051	U	0.00049	U	0.00049	U	0.00051	U	0.00045	U	0.00046	U	0.00048	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00047	U	0.0002	J	0.00042	J	0.00052	U	0.0005	U	0.0005	U	0.00052	U	0.00047	U	0.00047	U	0.00049	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00049	J	0.0022		0.004		0.00086	U	0.00082	U	0.00083	U	0.00086	U	0.00077	U	0.00077	U	0.00081	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00036		0.0016		0.0036		0.000099	U	0.000096	U	0.000096	U	0.0001	U	0.000089	U	0.000089	U	0.000094	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0002	U	0.00022	U	0.0003	U	0.00022	U	0.00022	U	0.00022	U	0.00022	U	0.0002	U	0.0002	U	0.00021	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00012	U	0.00013	U	0.00018	U	0.00014	U	0.00013	U	0.00013	U	0.00014	U	0.00012	U	0.00012	U	0.00013	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0002	U	0.00022	U	0.0003	U	0.00022	U	0.00022	U	0.00022	U	0.00022	U	0.0002	U	0.0002	U	0.00021	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0002	U	0.00022	U	0.0003	U	0.00022	U	0.00022	U	0.00022	U	0.00022	U	0.0002	U	0.0002	U	0.00021	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.00067	U	0.00072	U	0.00099	U	0.00075	U	0.00072	U	0.00072	U	0.00075	U	0.00067	U	0.00067	U	0.00071	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.00045	U	0.00048	U	0.00066	U	0.0005	U	0.00048	U	0.00048	U	0.0005	U	0.00044	U	0.00045	U	0.00047	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00049	U	0.00053	U	0.00074	U	0.00055	U	0.00053	U	0.00053	U	0.00055	U	0.00049	U	0.00049	U	0.00052	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00034	U	0.00036	U	0.0005	U	0.00037	U	0.00036	U	0.00036	U	0.00037	U	0.00033	U	0.00033	U	0.00035	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0004	U	0.00043	U	0.0006	U	0.00045	U	0.00043	U	0.00043	U	0.00045	U	0.0004	U	0.0004	U	0.00042	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00018	U	0.00019	U	0.00027	U	0.0002	U	0.00019	U	0.00019	U	0.0002	U	0.00018	U	0.00018	U	0.00019	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.004	U	0.0043	U	0.006	U	0.0045	U	0.0043	U	0.0043	U	0.0045	U	0.004	U	0.004	U	0.0042	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00046	U	0.00049	U	0.00069	U	0.00051	U	0.00049	U	0.00049	U	0.00051	U	0.00045	U	0.00046	U	0.00048	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00047	U	0.00051	U	0.0007	U	0.00052	U	0.0005	U	0.0005	U	0.00052	U	0.00047	U	0.00047	U	0.00049	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00022	U	0.00024	U	0.00033	U	0.00025	U	0.00024	U	0.00024	U	0.00025	U	0.00022	U	0.00022	U	0.00024	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00034	U	0.00036	U	0.0005	U	0.00037	U	0.00036	U	0.00036	U	0.00037	U	0.00033	U	0.00033	U	0.00035	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0051	U	0.0054	U	0.0075	U	0.0056	U	0.0054	U	0.0054	U	0.0056	U	0.005	U	0.005	U	0.0053	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0051	U	0.0054	U	0.0075	U	0.0056	U	0.0054	U	0.0054	U	0.0056	U	0.005	U	0.005	U	0.0053	U

Prepared by: AKN
Date: 2/13/25
Checked by:
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C4V9659	E1633DR	T	AFNJ95	LORNG_SB01043_0-1_10012024_BV	Perfluorooctanoic acid (PFOA)	0.00036		0.00036	J	IAG	MG/KG
					Perfluoroundecanoic acid (PFUnA)	0.00034		0.00034	J	IAG	MG/KG
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.00061	U	0.00061	UJ	IDG	MG/KG
			AFNJ80	LORNG_SB01047_0-1_10012024	Perfluoroundecanoic acid (PFUnA)	0.000075	J	0.000075	J	IAG	MG/KG
			AFNJ81	LORNG_SB01047_0-1_10012024FD	Perfluoroundecanoic acid (PFUnA)	0.000094	J	0.000094	J	IAG	MG/KG
			AFNJ96	LORNG_SB01049_0-1_10022024	Perfluoropentanoic acid (PFPeA)	0.000041	J	0.000041	J	IAG	MG/KG
			AFNJ98	LORNG_SB01049_6-8_10022024	Perfluoropentanoic acid (PFPeA)	0.000041	J	0.000041	J	IAG	MG/KG
			AFNJ85	LORNG_SB01050_0-1_10012024	Perfluoroundecanoic acid (PFUnA)	0.000062	J	0.000062	J	IAG	MG/KG
			AFNK00	LORNG_SB01051_4-6_10022024	Perfluorooctane sulfonamide (PFOSA)	0.00005	J	0.00005	J	EBL	MG/KG
			AFNK01	LORNG_SB01051_8-10_10022024	Perfluorooctane sulfonamide (PFOSA)	0.000063	J	0.000063	J	EBL	MG/KG
			AFNK02	LORNG_SB01052_0-1_10022024	Perfluorooctane sulfonamide (PFOSA)	0.000099	J	0.000099	J	EBL	MG/KG
			AFNK03	LORNG_SB01052_3-5_10022024	Perfluorohexanesulfonic acid (PFHxS)	0.00017	J	0.000023	U	LBL	MG/KG
			AFNJ86	LORNG_SB01053_0-1_10012024	Perfluorododecanoic acid (PFDoA)	0.000067	J	0.000067	J	IAG	MG/KG
					Perfluorononanesulfonic acid (PFNS)	0.00018	J	0.00018	J	IAG	MG/KG
					Perfluorodecanesulfonic acid (PFDS)	0.0001	J	0.0001	J	IAG	MG/KG
C4V9659	E1633DR	T	AFNJ87	LORNG_SB01055_0-2_10012024	Perfluorohexanesulfonic acid (PFHxS)	0.00017	J	0.00017	U	LBL	MG/KG
			AFNJ91	LORNG_SB05041_0-2_10012024	Perfluoropentanoic acid (PFPeA)	0.000043	J	0.000043	J	IAG	MG/KG
			AFNJ93	LORNG_SB12025_0-2_10012024	Perfluorohexanesulfonic acid (PFHxS)	0.000077	J	0.000081	U	LBL	MG/KG
			AFNJ94	LORNG_SB12025_13-15_10012024	Perfluorohexanesulfonic acid (PFHxS)	0.00011	J	0.00011	U	LBL	MG/KG

Prepared by:AKN
Date:2/13/25
Checked by:TC for EDS Validation Company
Date:2/14/25

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: C4W1232

Chemical Analyses Performed by:

Bureau Veritas Canada

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: C4W1232
Laboratory: Bureau Veritas Canada
Site: Loring AFB
Sampling dates: 10/08/2024 – 10/10/2024
Number of Samples: 10
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_C1_ST_10082024PF	AFQX05	groundwater	S2BVM
LORNG_C1_ST_10102024MF	AFQX06	groundwater	S2BVM
LORNG_C2_ST_10082024PF	AFQX07	groundwater	S2BVM
LORNG_C2_ST_10102024MF	AFQX08	groundwater	S2BVM
LORNG_C3_ST_10082024PF	AFQX09	groundwater	S2BVM
LORNG_C3_ST_10102024MF	AFQX10	groundwater	S2BVM
LORNG_ST12001_10082024PF	AFQX11	groundwater	S2BVM
LORNG_ST12001_10092024MF	AFQX12	groundwater	S2BVM
LORNG_ST16002_10082024PF	AFQX13	groundwater	S2BVM
LORNG_ST16002_10092024MF	AFQX14	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems were found for this criterion.

C) Field/Equipment blank contamination:

No sample was submitted as a field/equipment blank in association with samples in this sample delivery group (SDG).

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for isotope dilution standards listed in the table below during the analyses of the listed samples indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

Sample	*Isotope Dilution Standard*
LORNG_C1_ST_10082024PF	*PFOSA*
LORNG_C2_ST_10082024PF	*PFOSA*

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

No sample was submitted for MS/MSD evaluation in association with this SDG.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No samples were submitted as a field duplicate pair in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analytes in to the instruments linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	NA		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	NA		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	**The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.**
J	**The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.**
J+	**The result is an estimated quantity, but the result may be biased high.**
J-	**The result is an estimated quantity, but the result may be biased low.**
UJ	**The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.**
R	**The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.**

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/27/2025

Reviewed: 2/6/2025

Project: Loring AFB

SDG: C4W1232

LAB: Bureau Veritas Canada

Samples Collected: 10/08/2024 – 10/10/2024

10 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/11 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/08/2024 – 10/10/2024
Extracted 10/29/2024 and 11/03/2024
Analyzed 10/30/2024 and 11/04/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All reported ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

Batch 9731524 ok

Batch 9742338 ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
none

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
none

Batch 9731524 all ND
Batch 9742338 all ND

All ICB/CCBs all ND <MDL

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument LCMS7

11/03/2024 all %RSD <20%

ICV
ISC
CCV

Samples 5,13,14

CCV

10/30/2024 all %RSD <20%

ICV
ISC
CCV

Samples 5-10

CCV

Samples 11-14

CCV

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

Ion ratios out for:

LORNG_C1_ST_10082024PF	AFQX05	PFOSA	flag J
LORNG_C2_ST_10082024PF	AFQX07	PFOSA	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

none

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4W1232			
			Location	C1			
			Sample Date	10/8/2024		10/10/2024	
			Sample ID	LORNG_C1_ST_10082024PF		LORNG_C1_ST_10102024MF	
			QC Code	N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	J	6.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	4.8		9.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	4.8		8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.5		7.3	
		Perfluorooctanoic acid (PFOA)	NG/L	2.6		4.6	
		Perfluorononanoic acid (PFNA)	NG/L	0.63	J	0.89	J
		Perfluorodecanoic acid (PFDA)	NG/L	0.95	U	0.87	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.4	U	1.3	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.95	U	0.87	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.4	U	1.3	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.95	U	0.87	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1	J	2	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	J	2.4	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13		28	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.27	J	0.59	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	17		33	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.3	U	1.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.3	U	1.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.95	U	0.87	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.6	U	3.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.7	U	1.2	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	5.3	U	4.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.32	J	0.47	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3	U	1.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3	U	1.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.4	U	1.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.95	U	0.87	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	9.5	U	8.7	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	9.5	U	8.7	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.8	U	3.4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	3.2	U	3	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.4	U	1.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	28	U	26	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.3	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.6	U	2.4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.4	U	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.9	U	6.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	35	U	32	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	35	U	32	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4W1232													
			Location	C2				C3				ST12001				ST16002	
			Sample Date	10/8/2024		10/10/2024		10/8/2024		10/10/2024		10/8/2024		10/9/2024		10/8/2024		10/9/2024	
			Sample ID	LORNG_C2_ST_10082024PF		LORNG_C2_ST_10102024MF		LORNG_C3_ST_10082024PF		LORNG_C3_ST_10102024MF		LORNG_ST12001_10082024PF		LORNG_ST12001_10092024MF		LORNG_ST16002_10082024PF		LORNG_ST16002_10092024MF	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	J	6	J	30		15		9.5		31		6.9		7.3	
		Perfluoropentanoic acid (PFPeA)	NG/L	5.4		9.8		110		43		20		98		8.8		9.4	
		Perfluorohexanoic acid (PFHxA)	NG/L	5		8.5		84		38		25		110		10		9.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.7		7.5		95		27		12		47		9.4		9.7	
		Perfluorooctanoic acid (PFOA)	NG/L	2.7		5.1		59		26		13		56		5.6		5.1	
		Perfluorononanoic acid (PFNA)	NG/L	0.72	J	0.81	J	11		3.7		1.3	J	3.5		1.4	J	1.1	J
		Perfluorodecanoic acid (PFDA)	NG/L	0.84	U	0.87	U	1.7		1.3	J	0.68	J	1.3	J	0.83	J	0.54	J
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.2	U	1.3	U	0.56	J	1.2	U	1.2	U	2.7	U	1.3	U	1.3	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.84	U	0.87	U	0.84	U	0.81	U	0.84	U	1.8	U	0.86	U	0.89	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	2.7	U	1.3	U	1.3	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.84	U	0.87	U	0.84	U	0.81	U	0.84	U	1.8	U	0.86	U	0.89	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.98	J	2		5		5		8.3		27		2.1		2.7	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.1	J	2.6		7.1		6.7		11		35		3.3		3.9	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	14		28		140		100		110		330		44		52	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.35	J	0.51	J	3.9		3.2		6.8		28		1.1	J	0.9	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	20		29		290		270		740		2600		75		63	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2	U	1.2	U	1.1	U	1.1	U	1.5		3	J	1.2	U	1.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2	U	1.2	U	1.1	U	1.1	U	1.6		1.8	J	1.2	U	1.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.84	U	0.87	U	0.84	U	0.81	U	0.65	J	1.8	U	0.86	U	0.89	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.2	U	3.2	U	3.2	U	3	U	3.1	U	3.2	J	3.2	U	3.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.3	U	3.3	U	65		32		30		170		3.3	U	3.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.7	U	4.8	U	29		30		39		110		4.8	U	5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.33	J	0.41	J	45		19		12		33		1.2	J	1.6	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	2.7	U	1.3	U	1.2	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	2.7	U	1.3	U	1.2	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	2.7	U	1.3	U	1.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.84	U	0.87	U	0.84	U	0.81	U	0.84	U	1.8	U	0.86	U	0.89	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	8.4	U	8.7	U	8.4	U	8.1	U	8.4	U	18	U	8.6	U	8.9	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	8.4	U	8.7	U	8.4	U	8.1	U	8.4	U	18	U	8.6	U	8.9	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.4	U	3.4	U	3.4	U	3.2	U	3.3	U	7.3	U	3.4	U	3.5	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.2	U	3.2	U	3.2	U	3	U	3.1	U	6.9	U	3.2	U	3.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.9	U	2.9	U	2.9	U	2.8	U	2.9	U	6.3	U	2.9	U	3	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	2.7	U	1.3	U	1.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	25	U	26	U	25	U	24	U	25	U	54	U	25	U	26	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.2	U	3.2	U	3.2	U	3	U	3.1	U	6.9	U	3.2	U	3.3	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.3	U	2.4	U	2.3	U	2.2	U	2.3	U	5	U	2.3	U	2.4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1	U	2.2	U	2.1	U	2	U	2.1	U	4.6	U	2.2	U	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.1	U	6.3	U	6.1	U	5.9	U	6.1	U	13	U	6.3	U	6.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	31	U	29	U	30	U	67	U	31	U	32	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	31	U	29	U	30	U	67	U	31	U	32	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Company
Date:2/14/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C4W1232	E1633DR	T	AFQX05	LORNG_C1_ST_10082024PF	Perfluorooctane sulfonamide (PFOSA)	0.32	J	0.32	J	IAG	NG/L
			AFQX07	LORNG_C2_ST_10082024PF	Perfluorooctane sulfonamide (PFOSA)	0.33	J	0.33	J	IAG	NG/L

Prepared by:AKN
Date:2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

DATA VALIDATION REPORT

Loring AFB

SDG: C4W1275

Chemical Analyses Performed by:

Bureau Veritas Canada

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: C4W1275
Laboratory: Bureau Veritas Canada
Site: Loring AFB
Sampling dates: 10/09/2024
Number of Samples: 26
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_GC_BW002D_10092024	AFQZ74	groundwater	S2BVM
LORNG_JBW7305_107_10092024	AFQZ75	groundwater	S2BVM
LORNG_JBW7305_33_10092024	AFQZ76	groundwater	S2BVM
LORNG_JBW7347B_10092024	AFQZ77	groundwater	S2BVM
LORNG_JBW7347B_10092024FD	AFQZ78	groundwater	S2BVM
LORNG_JMW3601_10092024	AFQZ79	groundwater	S2BVM
LORNG_MMW0007A_10092024	AFQZ80	groundwater	S2BVM
LORNG_MMW0010_10092024	AFQZ81	groundwater	S2BVM
LORNG_MMW0010_10092024FD	AFQZ82	groundwater	S2BVM
LORNG_MMW0132_10092024	AFQZ83	groundwater	S2BVM
LORNG_OW07002 _0092024	AFQZ84	groundwater	S2BVM
LORNG_WBGB_BW001_10092024	AFQZ85	groundwater	S2BVM
LORNG_043-MW03_10092024	AFQZ86	groundwater	S2BVM
LORNG_BW05007_10092024	AFQZ87	groundwater	S2BVM
LORNG_BW05011S_10092024	AFQZ88	groundwater	S2BVM
LORNG_BW06007_10092024	AFQZ89	groundwater	S2BVM
LORNG_BW06007_10092024FD	AFQZ90	groundwater	S2BVM
LORNG_EB018_10092024	AFQZ91	equipment blank	S2BVM
LORNG_EB019_10092024	AFQZ92	equipment blank	S2BVM
LORNG_JPZ0606_10092024	AFQZ93	groundwater	S2BVM
LORNG_MMW0007A_10092024FD	AFQZ94	groundwater	S2BVM
LORNG_MMW0007B_10092024	AFQZ95	groundwater	S2BVM
LORNG_MMW0011_10092024	AFQZ96	groundwater	S2BVM
LORNG_MMW0124_10092024	AFQZ97	groundwater	S2BVM
LORNG_EB020_10092024	AFQZ98	equipment blank	S2BVM
LORNG_SB/OW12001_10092024	AFQZ99	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB018_10092024 was submitted as an equipment blank in association with samples LORNG_GC_BW002D_10092024 and LORNG_BW05011S_10092024. No problems were found for this criterion.

Sample LORNG_EB019_10092024 was submitted as an equipment blank in association with sample LORNG_WBGB_BW001_10092024. No problems were found for this criterion.

Sample LORNG_EB020_10092024 was submitted as an equipment blank in association with the samples listed in the table below. No problems were found for this criterion.

LORNG_BW06007_10092024	*LORNG_BW06007_10092024FD*
LORNG_JMW3601_10092024	*LORNG_MMW0124_10092024*

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring qualification of sample results were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for isotope dilution standards listed in the table below during the analyses of the listed samples indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

Sample	*Isotope Dilution Standard*
LORNG_JMW3601_10092024	*PFOSA*
LORNG_MMW0124_10092024	*PFOSA*

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

No sample was submitted for MS/MSD evaluation in association with this sample delivery group (SDG).

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_MMW0010_10092024 and LORNG_MMW0010_10092024FD were submitted as a field duplicate pair in association with this SDG. Adequate field precision was demonstrated.

Samples LORNG_MMW0007A_10092024 and LORNG_MMW0007A_10092024FD were submitted as a field duplicate pair in association with this SDG. Adequate field precision was demonstrated.

Samples LORNG_JBW7347B_10092024 and LORNG_JBW7347B_10092024FD were submitted as a field duplicate pair in association with this SDG. Adequate field precision was demonstrated.

Samples LORNG_BW06007_10092024 and LORNG_BW06007_10092024FD were submitted as a field duplicate pair in association with this SDG. Adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analytes in to the instruments linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	NA		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_MMW0010_10092024	LORNG_MMW0010_10092024FD	RPD		
11CLPF3OUDSA	0	0	0.0		
33FTCA	0	0	0.0		
42FTSA	0	0	0.0		
53FTCA	0	0	0.0		
62FTSA	0	0	0.0		
73FTCA	0	0	0.0		
82FTSA	0	0	0.0		
9CLPF3ONSA	0	0	0.0		
ADONA	0	0	0.0		
FOSA	0.93	1.2	25.4		
HFPODA	0	0	0.0		
NETFOSA	0	0	0.0		
NETFOSAA	0	0	0.0		
NETFOSE	0	0	0.0		
NFDHA	0	0	0.0		
NMEFOSA	0	0	0.0		
NMEFOSAA	0	0	0.0		
NMEFOSE	0	0	0.0		
PFBA	6.9	6.6	4.4		
PFBSA	3	2.9	3.4		
PFDA	0	0	0.0		
PFDOA	0	0	0.0		
PFDOSA	0	0	0.0		
PFDSA	0	0	0.0		
PFEESA	0	0	0.0		
PFHPA	8.6	8.7	1.2		
PFHPSA	0.95	0.9	5.4		
PFHXA	14	13	7.4		
PFHXSA	48	47	2.1		
PFMBA	0	0	0.0		
PFMPA	0	0	0.0		
PFNA	1	1	0.0		
PFNSA	0	0	0.0		
PFOA	12	11	8.7		
PFOS	64	61	4.8		
PFPA	15	14	6.9		
PFPESA	3.7	3.5	5.6		
PFTEA	0	0	0.0		
PFTRIA	0	0	0.0		
PFUNA	0	0	0.0		

Parameters	Original Sample	Duplicate Sample	
	LORNG_MMW0007A_10092024	LORNG_MMW0007A_10092024FD	RPD
11CLPF3OUDSA	0	0	0.0
33FTCA	0	0	0.0
42FTSA	0	0	0.0
53FTCA	0	0	0.0
62FTSA	0	0	0.0
73FTCA	0	0	0.0
82FTSA	0	0	0.0
9CLPF3ONSA	0	0	0.0
ADONA	0	0	0.0
FOSA	0.42	0.4	4.9
HFPODA	0	0	0.0
NETFOSA	0	0	0.0
NETFOSAA	0	0	0.0
NETFOSE	0	0	0.0
NFDHA	0	0	0.0
NMEFOSA	0	0	0.0
NMEFOSAA	0	0	0.0
NMEFOSE	0	0	0.0
PFBA	2.6	2.8	7.4
PFBSA	0.68	0.78	13.7
PFDA	0	0	0.0
PFDOA	0	0	0.0
PFDOSA	0	0	0.0
PFDSA	0	0	0.0
PFEESA	0	0	0.0
PFHPA	1.7	1.9	11.1
PFHPSA	0	0	0.0
PFHXA	3.9	4.4	12.0
PFHXSA	6.2	6.9	10.7
PFMBA	0	0	0.0
PFMPA	0	0	0.0
PFNA	0	0	0.0
PFNSA	0	0	0.0
PFOA	1.9	2	5.1
PFOS	5.2	6.1	15.9
PFPA	4.9	5.3	7.8
PFPESA	0.62	0.63	1.6
PFTEA	0	0	0.0
PFTRIA	0	0	0.0
PFUNA	0	0	0.0

Parameters	Original Sample	Duplicate Sample	
	LORNG_JBW7347B_10092024	LORNG_JBW7347B_10092024FD	RPD
11CLPF3OUDSA	0	0	0.0
33FTCA	0	0	0.0
42FTSA	0	0	0.0
53FTCA	0	0	0.0
62FTSA	0	0	0.0
73FTCA	0	0	0.0
82FTSA	0	0	0.0
9CLPF3ONSA	0	0	0.0
ADONA	0	0	0.0
FOSA	0.31	0.22	34.0
HFPODA	0	0	0.0
NETFOSA	0	0	0.0
NETFOSAA	0	0	0.0
NETFOSE	0	0	0.0
NFDHA	0	0	0.0
NMEFOSA	0	0	0.0
NMEFOSAA	0	0	0.0
NMEFOSE	0	0	0.0
PFBA	3	2.9	3.4
PFBSA	1.8	1.6	11.8
PFDA	0	0	0.0
PFDOA	0	0	0.0
PFDOSA	0	0	0.0
PFDSA	0	0	0.0
PFEESA	0	0	0.0
PFHPA	2.5	2.2	12.8
PFHPSA	0.57	0.56	1.8
PFHXA	5.1	4.8	6.1
PFHXSA	39	36	8.0
PFMBA	0	0	0.0
PFMPA	0	0	0.0
PFNA	0.37	0.37	0.0
PFNSA	0	0	0.0
PFOA	6.5	5.6	14.9
PFOS	25	24	4.1
PFPA	5.4	5	7.7
PFPESA	2.3	2.1	9.1
PFTEA	0	0	0.0
PFTRIA	0	0	0.0
PFUNA	0	0	0.0

1.5

Parameters	Original Sample	Duplicate Sample	
	LORNG_BW06007_10092024	LORNG_BW06007_10092024FD	RPD
11-CHLOROEICOSAFLUORO-3-OXAUNDEC	0	0	0.0
2H,2H,3H,3H-PERFLUOROOCTANOIC ACI	0	0	0.0
3-PERFLUOROHEPTYL PROPANOIC ACID	0	0	0.0
3-PERFLUOROPROPYL PROPANOIC ACID	0	0	0.0
4,8-DIOXA-3H-PERFLUORONONANOIC AC	0	0	0.0
4:2 FLUOROTELOMER SULFONIC ACID	0	0	0.0
6:2 FLUOROTELOMER SULFONIC ACID	190	180	5.4
8:2 FLUOROTELOMER SULFONIC ACID	85	80	6.1
9-CHLOROHEXADECAFLUORO-3-OXANON	0	0	0.0
HEXAFLUOROPROPYLENE OXIDE DIMER A	0	0	0.0
N-ETHYL PERFLUOROOCTANESULFONAM	0	0	0.0
N-ETHYL-HEPTADECAFLUOROOCTANE SU	0	0	0.0
N-ETHYL-HEPTADECAFLUOROOCTANE SU	0	0	0.0
N-METHYL PERFLUOROOCTANESULFONA	0	0	0.0
N-METHYL-HEPTADECAFLUOROOCTANE	0	0	0.0
N-METHYL-HEPTADECAFLUOROOCTANE	0	0	0.0
NONAFLUORO-3,6-DIOXAHEPTANOIC AC	0	0	0.0
PERFLUORO(2-ETHOXYETHANE)SULPHON	0	0	0.0
PERFLUORO-3-METHOXYPROPANOIC ACI	0	0	0.0
PERFLUORO-4-METHOXYBUTANOIC ACID	0	0	0.0
PERFLUOROBUTANE SULFONIC ACID	7.8	7.5	3.9
PERFLUOROBUTANOIC ACID	73	67	8.6
PERFLUORODECANE SULFONIC ACID	0	0	0.0
PERFLUORODECANOIC ACID	1.4	1.3	7.4
PERFLUORODODECANE SULFONIC ACID	0	0	0.0
PERFLUORODODECANOIC ACID	0	0	0.0
PERFLUOROHEPTANE SULFONIC ACID	2.9	2.9	0.0
PERFLUOROHEPTANOIC ACID	150	140	6.9
PERFLUOROHEXANE SULFONIC ACID	90	83	8.1
PERFLUOROHEXANOIC ACID	130	120	8.0
PERFLUORONONANE SULFONIC ACID	0	0	0.0
PERFLUORONONANOIC ACID	19	17	11.1
PERFLUOROOCTANE SULFONAMIDE	3.4	2.9	15.9
PERFLUOROOCTANE SULFONIC ACID	180	200	10.5
PERFLUOROOCTANOIC ACID	78	71	9.4
PERFLUOROPENTANE SULFONIC ACID	10	9.9	1.0
PERFLUOROPENTANOIC ACID	250	220	12.8
PERFLUOROTETRADECANOIC ACID	0	0	0.0
PERFLUOROTRIDECANOIC ACID	0	0	0.0
PERFLUOROUNDECANOIC ACID	0	0	0.0

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/28/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: C4W1275

LAB: Bureau Veritas Canada

Samples Collected: 10/09/2024

26 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/11 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/09/2024
Extracted 10/28/2024; 10/30/2024; 10/31/2024; 11/01/2024 and 11/03/2024
Analyzed 10/30/2024; 10/31/2024; 11/01/2024; and 11/04/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All reported ok except

AFQZ93 13C2-4:2 FTS ↑ 4:2 FTS ND; no action

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

Batch 1728787 ok
Batch 9732953 ok
Batch 9734690 ok
Batch 3742338 ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
none

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB018_10092024 all ND
Associated with samples
LORNG_GC_BW002D_10092024
LORNG_BW05011S_10092024

LORNG_EB019_10092024 all ND
Associated with samples
LORNG_WBGB_BW001_10092024
JBW7350 (not collected)

LORNG_EB020_10092024 all ND
Associated with samples
LORNG_BW06007_10092024
LORNG_BW06007_10092024FD
LORNG_JMW3601_10092024
LORNG_MMW0124_10092024

Batch 1728787 all ND
Batch 9732953 all ND
Batch 9734690 all ND
Batch 3742338 all ND

All ICB/CCBs all ND <MDL

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10

samples and at the end of each analytical sequence

- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument LCMS7

10/30/2024 all %RSD <20%

ICV
ISC
CCV

Samples 74,75,76,77

CCV

10/31/2024 am all %RSD <20%

ICV
ISC
CCV

Samples 78,79,80,81,82,83,84

CCV

Samples 85,86,87,88,89

CCV

10/31/2024 pm all %RSD <20%

ICV
ISC
CCV

Samples 90,91,92,93,94,95

CCV

Samples 96,97,98,99

CCV

11/4/2024 all %RSD <20%

ICV
ISC
CCV

Samples 79,88,89,93

CCV

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

Ion ratios out for:

AFQZ79 LORNG_JMW3601_10092024	PFOSA	flag J
AFQZ97 LORNG_MMW0124_10092024	PFOSA	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_MMW0010_10092024 and LORNG_MMW0010_10092024FD	all ok
LORNG_MMW0007A_10092024 and LORNG_MMW0007A_10092024FD	all ok
LORNG_JBW7347B_10092024 and LORNG_JBW7347B_10092024FD	all ok
LORNG_BW06007_10092024 and LORNG_BW06007_10092024FD	all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4W1275						
			Location	043-MW03		BW05007		BW05011S		
			Sample Date	10/9/2024		10/9/2024		10/9/2024		
			Sample ID	LORNG_043-MW03_10092024		LORNG_BW05007_10092024		LORNG_BW05011S_10092024		
			QC Code	N		N		N		
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	7.6		70		3.3	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	7.2		220		1.7	U	
		Perfluorohexanoic acid (PFHxA)	NG/L	6.6		140		1	J	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.1		110		0.83	U	
		Perfluorooctanoic acid (PFOA)	NG/L	7		86		0.83	U	
		Perfluorononanoic acid (PFNA)	NG/L	1.6		17		0.6	U	
		Perfluorodecanoic acid (PFDA)	NG/L	0.9	U	0.35	J	0.83	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.3	U	1.2	U	1.2	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	0.9	U	0.8	U	0.83	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.3	U	1.2	U	1.2	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.9	U	0.8	U	0.83	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.6		34		0.53	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.8		48		0.56	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	27		370		0.67	J	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.1	J	19		0.56	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	110		1300		2.4		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2	U	1.1	U	1.1	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2	U	1.1	U	1.1	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.9	U	0.8	U	0.83	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.4	U	3	U	3.1	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.5	U	74		7.8		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	5	U	7.8		4.6	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.37	J	2.5		0.27	J	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3	U	1.2	U	1.2	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3	U	1.2	U	1.3	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.3	U	1.2	U	1.2	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.9	U	0.8	U	0.83	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	9	U	8	U	8.3	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	9	U	8	U	8.3	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6	U	3.2	U	3.3	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.4	U	3	U	3.1	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	3.1	U	2.7	U	2.8	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.3	U	1.2	U	1.2	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	27	U	24	U	24	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.4	U	3	U	3.1	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.5	U	2.2	U	2.3	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U	2	U	2.1	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.5	U	5.8	U	6	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	33	U	29	U	30	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	33	U	29	U	30	U	

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Subcontractor Validation Company
Date:2/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4W1275																	
			Location	BW06007		FIELDQC				GC_BW002D		JBW7347B		JMW0010				JMW3601			
			Sample Date	10/9/2024		10/9/2024				10/9/2024		10/9/2024		10/9/2024				10/9/2024			
			Sample ID	LORNG_BW06007_10092024		LORNG_BW06007_10092024FD		LORNG_EB018_10092024		LORNG_EB019_10092024		LORNG_EB020_10092024		LORNG_GC_BW002D_10092024		LORNG_JBW7347B_10092024		LORNG_JBW7347B_10092024FD		LORNG_JBW7305_33_10092024		LORNG_JBW7305_107_10092024		LORNG_JMW3601_10092024	
			QC Code	N		FD		EB		EB		EB		N		N		FD		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	73		67		3.6	U	3.4	U	3.6	U	3.5	U	2.9	J	3	J	9.1		9		2.3	J
		Perfluoropentanoic acid (PFPeA)	NG/L	250		220		1.8	U	1.7	U	1.8	U	1.8	U	5		5.4		23		23		2	J
		Perfluorohexanoic acid (PFHxA)	NG/L	130		120		0.65	U	0.62	U	0.66	U	0.54	J	4.8		5.1		17		17		1.6	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	150		140		0.89	U	0.85	U	0.9	U	0.88	U	2.2		2.5		11		11		1.3	J
		Perfluorooctanoic acid (PFOA)	NG/L	78		71		0.89	U	0.85	U	0.9	U	0.88	U	5.6		6.5		14		13		6.4	
		Perfluorononanoic acid (PFNA)	NG/L	19		17		0.65	U	0.62	U	0.66	U	0.64	U	0.37	J	0.37	J	1.6		1.6		0.45	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.4	J	1.3	J	0.89	U	0.85	U	0.9	U	0.88	U	0.82	U	0.78	U	0.49	J	0.54	J	0.86	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.87	U	0.85	U	0.89	U	0.85	U	0.9	U	0.88	U	0.82	U	0.78	U	0.79	U	0.82	U	0.86	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.87	U	0.85	U	0.89	U	0.85	U	0.9	U	0.88	U	0.82	U	0.78	U	0.79	U	0.82	U	0.86	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	7.8		7.5		0.57	U	0.54	U	0.57	U	0.56	U	1.6		1.8		3.2		3.1		1.1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	10		9.9		0.61	U	0.58	U	0.61	U	0.6	U	2.1		2.3		4.3		4.4		1	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	90		83		0.84	U	0.8	U	0.85	U	0.83	U	36		39		52		51		9.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.9		2.9		0.61	U	0.58	U	0.61	U	0.6	U	0.56	J	0.57	J	1.4		1.5		0.59	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	180		200		1.2	U	1.2	U	1.2	U	1.2	U	24		25		71		71		9.5	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.87	U	0.85	U	0.89	U	0.85	U	0.9	U	0.88	U	0.82	U	0.78	U	0.79	U	0.82	U	0.86	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.2	U	3.2	U	3.4	U	3.2	U	3.4	U	3.3	U	3.1	U	2.9	U	3	U	3.1	U	3.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	190		180		3.5	U	3.3	U	3.5	U	2.3	J	3.1	U	3	U	3	U	3.2	U	3.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	85		80		5	U	4.7	U	5	U	4.9	U	4.5	U	4.3	U	4.4	U	4.5	U	4.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	3.4		2.9		0.65	U	0.62	U	0.66	U	0.24	J	0.22	J	0.31	J	0.57	U	0.32	J	0.4	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.87	U	0.85	U	0.89	U	0.85	U	0.9	U	0.88	U	0.82	U	0.78	U	0.79	U	0.82	U	0.86	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	8.7	U	8.5	U	8.9	U	8.5	U	9	U	8.8	U	8.2	U	7.8	U	7.9	U	8.2	U	8.6	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	8.7	U	8.5	U	8.9	U	8.5	U	9	U	8.8	U	8.2	U	7.8	U	7.9	U	8.2	U	8.6	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.4	U	3.4	U	3.6	U	3.4	U	3.6	U	3.5	U	3.2	U	3.1	U	3.1	U	3.2	U	3.4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.2	U	3.2	U	3.4	U	3.2	U	3.4	U	3.3	U	3.1	U	2.9	U	3	U	3.1	U	3.2	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.9	U	2.9	U	3	U	2.9	U	3.1	U	3	U	2.8	U	2.7	U	2.7	U	2.8	U	2.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	26	U	25	U	26	U	25	U	27	U	26	U	24	U	23	U	23	U	24	U	25	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.2	U	3.2	U	3.4	U	3.2	U	3.4	U	3.3	U	3.1	U	2.9	U	3	U	3.1	U	3.2	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.4	U	2.3	U	2.4	U	2.3	U	2.5	U	2.4	U	2.2	U	2.1	U	2.1	U	2.2	U	2.4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U	2.1	U	2.2	U	2.1	U	2.3	U	2.2	U	2	U	1.9	U	2	U	2	U	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.3	U	6.2	U	6.5	U	6.2	U	6.6	U	6.4	U	5.9	U	5.7	U	5.7	U	5.9	U	6.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U	31	U	33	U	31	U	33	U	32	U	30	U	28	U	29	U	30	U	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U	31	U	33	U	31	U	33	U	32	U	30	U	28	U	29	U	30	U	31	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Subcontractor Validation Company
Date:2/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4W1275	
			Location	WBGB_BW001	
			Sample Date	10/9/2024	
			Sample ID	LORNG_WBGB_BW001_10092024	
			QC Code	N	
Class	Fraction	Analyte Name	Units	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.1	J
		Perfluorohexanoic acid (PFHxA)	NG/L	2.1	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.88	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.4	J
		Perfluorononanoic acid (PFNA)	NG/L	0.63	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.86	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.3	U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.86	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.3	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.86	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.4	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	6.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.59	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	7.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.86	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	3.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	4.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.36	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	1.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	1.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	1.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.86	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	8.6	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	8.6	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.4	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.2	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	1.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	26	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.2	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	2.4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	6.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	31	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	31	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Subcontractor Validation Company
Date:2/21/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C4W1275	E1633DR	T	AFQZ79	LORNG_JMW3601_10092024	Perfluorooctane sulfonamide (PFOSA)	0.4	J	0.4	J	IAG	NG/L
			AFQZ94	LORNG_MMW0007A_10092024FD	Perfluorooctane sulfonamide (PFOSA)	0.42	J	0.42	J	IAG	NG/L

DATA VALIDATION REPORT

Loring AFB

SDG: FC19095

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19095
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 09/20/2024, 09/23/2024 – 09/24/2024
Number of Samples: 21
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW05008_09242024	FC19095-1	groundwater	S2BVM
LORNG_BW05010_09242024	FC19095-2	groundwater	S2BVM
LORNG_JMW-0603_09242024	FC19095-3	groundwater	S2BVM
LORNG_MMW0006_09232024	FC19095-4	groundwater	S2BVM
LORNG_OW16003_09242024	FC19095-5	groundwater	S2BVM
LORNG_BB_BW002_09242024	FC19095-6	groundwater	S2BVM
LORNG_BB_OW002_09242024	FC19095-7	groundwater	S2BVM
LORNG_BW05006_09232024	FC19095-8	groundwater	S2BVM
LORNG_JBW7913_09242024	FC19095-9	groundwater	S2BVM
LORNG_NP_BW001S_09242024	FC19095-10	groundwater	S2BVM
LORNG_NP_OW001_09242024	FC19095-11	groundwater	S2BVM
LORNG_RFW-38_09232024	FC19095-12	groundwater	S2BVM
LORNG_EBGB_BW001_09202024	FC19095-13	groundwater	S2BVM
LORNG_JBW7105_09202024	FC19095-14	groundwater	S2BVM
LORNG_JBW7107_09202024	FC19095-15	groundwater	S2BVM
LORNG_USMW024_09202024	FC19095-16	groundwater	S2BVM
LORNG_JMW2680_09242024	FC19095-17	groundwater	S2BVM
LORNG_NP_BW001D_09242024	FC19095-18	groundwater	S2BVM
LORNG_OW01003_09242024	FC19095-19	groundwater	S2BVM
LORNG_UNK-036_09202024	FC19095-20	groundwater	S2BVM
LORNG_USMW003_09202024	FC19095-21	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The observed %R for PFDA was outside of acceptance criteria for the low level CCV associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "UJ" on this basis.

LORNG_EBGB_BW001_09202024	*LORNG_UNK-036_09202024*
LORNG_NP_BW001D_09242024	*LORNG_USMW003_09202024*
LORNG_OW01003_09242024	

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

No samples were submitted field/equipment blanks in association with the samples in this sample delivery group (SDG).

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exception.

The transition mass ratio was outside the established ratio limits for PFOA during the analysis of sample LORNG_UNK-036_09202024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_BW05008_09242024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_MMW0006_09232024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_EBGB_BW001_09202024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_OW01003_09242024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No samples were submitted as a field duplicate pair in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

No re-extraction and/or reanalyses were submitted for data review.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	NA		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check			x
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/29/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19095

LAB: SGS Orlando

Samples Collected: 09/20/2024, 09/23/2024 – 09/24/2024

21 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 09/26 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 09/20/2024, 09/23/2024 – 09/24/2024
Extracted 10/11/2024; 10/21/2024
Analyzed 10/29/2024; 10/12/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5788-LLBS ok
OP5798-LLBS ok
OP5798-LLBS ok

OP5788-BS ok
OP5798-BS ok
OP5798-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_BW05008_09242024		**FC19095-1**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				

LORNG_MMW0006_09232024		**FC19095-4**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**Flag**
PFTrDA	**ok**	↓	**ok**	**inconclusive; no action**
PFNS	**ok**	↓	**ok**	**inconclusive; no action**
PFDS	**ok**	↓	**out**	**ND; no action**
PFDoS	**ok**	↓	**out**	**ND; no action**
9Cl-PF3ONS	**ok**	↓	**out**	**ND; no action**
11Cl-PF3OUdS	**ok**	↓	**out**	**ND; no action**

LORNG_EBGB_BW001_09202024		**FC19095-13**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**Flag**
All ok				

LORNG_OW01003_09242024		**FC19095-19**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**Flag**

Matrix Duplicate:

none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
none

OP5788-MB all ND
OP5798-MB all ND
OP5798-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence

- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS7Q

10/21/24

S7Q175-IBLK 7Q12106.D 10/21/24 15:55 n/a Instrument Blank
335-76-2 PFDA 0.0017 J ug/L ND; no action
376-06-7 PFTeDA 0.00053 J ug/L
S7Q175-ICV175 7Q12107.D 10/21/24 16:09 n/a Initial cal verification 4
S7Q175-ICV175 7Q12108.D 10/21/24 16:23 n/a Initial cal verification 20
S7Q175-CC175 7Q12109.D 10/21/24 16:37 n/a Continuing cal 4
S7Q175-CC175 7Q12110.D 10/21/24 16:51 n/a Continuing cal 1.0LL
PFDA out ↑ flag UJ
LORNG_EBGB_BW001_09202024
LORNG_NP_BW001D_09242024
LORNG_OW01003_09242024
LORNG_UNK-036_09202024
LORNG_USMW003_09202024

Sample 13

S7Q175-CC175 7Q12121.D 10/21/24 19:25 n/a Continuing cal 4
S7Q175-ICCB 7Q12122.D 10/21/24 19:39 n/a Continuing Calibration Blank

Sample 18-21

S7Q175-CC175 7Q12132.D 10/21/24 21:59 n/a Continuing cal 4

Instrument GCMS8Q

10/26/24

S8Q187-IBLK 8Q13570.D 10/26/24 14:58 n/a Instrument Blank
4151-50-2 EtFOSA 0.0014 J ug/L ND; no action
S8Q187-ICV187 8Q13571.D 10/26/24 15:11 n/a Initial cal verification 4
S8Q187-ICV187 8Q13572.D 10/26/24 15:25 n/a Initial cal verification 20

S8Q190-IBLK 8Q13748.D 10/29/24 10:58 n/a Instrument Blank
S8Q190-CC187 8Q13749.D 10/29/24 11:11 n/a Continuing cal 4
S8Q190-CC187 8Q13750.D 10/29/24 11:25 n/a Continuing cal 1.0LL

Samples 1-3

S8Q190-CC187 8Q13759.D 10/29/24 13:36 n/a Continuing cal 4
S8Q190-ICCB 8Q13760.D 10/29/24 13:49 n/a Continuing Calibration Blank

Samples 4-11

S8Q190-CC187 8Q13771.D 10/29/24 16:21 n/a Continuing cal 4
S8Q190-ICCB 8Q13772.D 10/29/24 16:35 n/a Continuing Calibration Blank

Samples 12,14-17

S8Q190-CC187 8Q13778.D 10/29/24 17:57 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

FC19095-20 LORNG_UNK-036_09202024 PFOA FLAG J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

none

~~SEE FIELD DUPLICATE WORKSHEET~~ TC 2/13/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19095											
		Location		BB_BW002	BB_OW002	BW05006	BW05008	BW05010	EBGB_BW001	JBW7105	JBW7107	JBW7913	JMW-0603	JMW2680	MMW0006
		Sample Date		9/24/2024	9/24/2024	9/23/2024	9/24/2024	9/24/2024	9/20/2024	9/20/2024	9/20/2024	9/24/2024	9/24/2024	9/24/2024	9/23/2024
		Sample ID		LORNG_BB_BW002_09242024	LORNG_BB_OW002_09242024	LORNG_BW05006_09232024	LORNG_BW05008_09242024	LORNG_BW05010_09242024	LORNG_EBGB_BW001_09202024	LORNG_JBW7105_09202024	LORNG_JBW7107_09202024	LORNG_JBW7913_09242024	LORNG_JMW-0603_09242024	LORNG_JMW2680_09242024	LORNG_MMW0006_09232024
		QC Code		N	N	N	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8 U	3.8 U	4 U	2.6 J	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.6 J	4 U	4.8 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.9 U	2 U	4.5 J	1.9 U	2 U	2.1 J	2 U	1.9 U	1.9 U	2 U	7.2 J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.9 U	0.62 J	2.3 J	1.9 U	0.82 J	1.4 J	2 U	1.9 U	1.9 U	0.7 J	1.9 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	2 U	1.1 J	1.9 U	2 U	0.49 J	2 U	1.9 U	1.9 U	2 U	0.55 J
		Perfluorooctanoic acid (PFOA)	NG/L	0.96 U	0.94 U	0.82 J	1 J	0.53 J	1.1 J	0.61 J	0.98 U	0.97 U	0.94 J	0.82 J	1.2 J
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	0.85 J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 UJ	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.9 U	2 U	0.8 J	0.66 J	2 U	0.72 J	2 U	1.9 U	0.58 J	2 U	0.7 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	1.5 J	1.9 J	4	2.5 J	3.7 J	1.8 J	1.5 J	1.9 U	2.7 J	4.5	2.3 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	0.71 J	25.9	1.7 J	2.3 J	4.7	0.74 J	0.89 J	1.9 U	1 J	3.4 J	3.8 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7 U	7.5 U	7.9 U	7.8 U	7.8 U	8 U	7.7 U	7.8 U	7.8 U	7.6 U	8 U	8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.7 U	7.5 U	7.9 U	7.8 U	7.3 J	8 U	7.7 U	7.8 U	7.8 U	7.6 U	8 U	8 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7 U	7.5 U	7.9 U	7.8 U	7.8 U	8 U	7.7 U	7.8 U	7.8 U	7.6 U	8 U	8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	19 U	19 U	20 U	20 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	19 U	19 U	20 U	20 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		11-Chlorоeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8 U	3.8 U	4 U	3.9 U	3.9 U	4 U	3.8 U	3.9 U	3.9 U	3.8 U	4 U	4 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	2 U	2 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6 U	9.4 U	9.9 U	9.8 U	9.7 U	10 U	9.6 U	9.8 U	9.7 U	9.5 U	10 U	10 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	19 U	19 U	20 U	20 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	19 U	19 U	20 U	20 U

Prepared by: AKN
Date: 2/10/25
Checked by:TC
Date:2/13/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19095																
			Location	NP_BW001D		NP_BW001S		NP_OW001		OW01003		OW16003		RFW-38		UNK-036		USMW003		USMW024	
			Sample Date	9/24/2024		9/24/2024		9/24/2024		9/24/2024		9/24/2024		9/23/2024		9/20/2024		9/20/2024		9/20/2024	
			Sample ID	LORNG_NP_BW001D_09242024		LORNG_NP_BW001S_09242024		LORNG_NP_OW001_09242024		LORNG_OW01003_09242024		LORNG_OW16003_09242024		LORNG_RFW-38_09232024		LORNG_UNK-036_09202024		LORNG_USMW003_09202024		LORNG_USMW024_09202024	
			QC Code	N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.6	J	3.7	U	3.8	U	3.8	U	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.97	U	0.95	U	0.98	U	0.96	U	0.52	J	0.93	U	1.3	J	0.94	U	0.83	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	UJ	1.9	U	2	U	1.9	UJ	1.9	U	1.9	U	1.9	UJ	1.9	UJ	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	0.49	J	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	1.7	J	1.1	J	2.3	J	1.9	U	1.2	J	1.5	J	0.73	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	1.2	J	1.9	U	1.2	J	1.9	U	3.9		1.2	J	3.5	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.8	U	7.6	U	7.8	U	7.7	U	7.7	U	7.5	U	7.7	U	7.5	U	7.6	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	13	J	7.6	U	7.8	U	7.7	U	7.7	U	7.5	U	7.7	U	7.5	U	7.6	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U	7.6	U	7.8	U	7.7	U	7.7	U	7.5	U	7.7	U	7.5	U	7.6	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	20	U	19	U	19	U	19	U	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	20	U	19	U	19	U	19	U	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U	3.8	U	3.9	U	3.8	U	3.8	U	3.7	U	3.8	U	3.8	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.7	U	9.5	U	9.8	U	9.6	U	9.6	U	9.3	U	9.6	U	9.4	U	9.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	20	U	19	U	19	U	19	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	20	U	19	U	19	U	19	U	19	U	19	U	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC
Date:2/13/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19095	E1633DR	T	FC19095-13	LORNG_EBGB_BW001_09202024	Perfluorodecanoic acid (PFDA)	2	U	2	UJ	CVHL	NG/L
			FC19095-18	LORNG_NP_BW001D_09242024	Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	CVHL	NG/L
			FC19095-19	LORNG_OW01003_09242024	Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	CVHL	NG/L
			FC19095-20	LORNG_UNK-036_09202024	Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	IAG	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	CVHL	NG/L
			FC19095-21	LORNG_USMW003_09202024	Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	CVHL	NG/L

Prepared by:AKN
Date:2/10/25
Checked by:TC
Date:2/13/25

DATA VALIDATION REPORT

Loring AFB

SDG: FC19279

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

Revised Report Released: February 06, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19279
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 09/25/2024 – 09/27/2024, and 09/30/2024
Number of Samples: 59
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW18003_09252024	FC19279-1	groundwater	S2BVM
LORNG_JBW7752_09252024	FC19279-2	groundwater	S2BVM
LORNG_JMW0010_09252024	FC19279-3	groundwater	S2BVM
LORNG_JMW-0602_09252024	FC19279-4	groundwater	S2BVM
LORNG_MMW0326_09252024	FC19279-5	groundwater	S2BVM
LORNG_OW22001_09252024	FC19279-6	groundwater	S2BVM
LORNG_OW22003_09252024	FC19279-7	groundwater	S2BVM
LORNG_SB/OW16001_09252024FD	FC19279-8	groundwater	S2BVM
LORNG_BW03001_09302024	FC19279-9	groundwater	S2BVM
LORNG_BW10006_09262024FD	FC19279-10	groundwater	S2BVM
LORNG_BW14005_09252024	FC19279-11	groundwater	S2BVM
LORNG_BW16002_09262024	FC19279-12	groundwater	S2BVM
LORNG_EB002_09302024	FC19279-13	equipment blank	S2BVM
LORNG_JBW7710_09262024	FC19279-14	groundwater	S2BVM
LORNG_MMW0018B_09302024	FC19279-15	groundwater	S2BVM
LORNG_MMW0018B_09302024FD	FC19279-16	groundwater	S2BVM
LORNG_SB/OW16001_09252024	FC19279-17	groundwater	S2BVM
LORNG_BW16001_09252024	FC19279-18	groundwater	S2BVM
LORNG_BW16001_09252024FD	FC19279-19	groundwater	S2BVM
LORNG_JMW3102_09252024	FC19279-20	groundwater	S4VM
LORNG_JPZ7601_09252024	FC19279-21	groundwater	S4VM
LORNG_MMW0009_09252024	FC19279-22	groundwater	S4VM
LORNG_MMW0422_09252024	FC19279-23	groundwater	S4VM
LORNG_MMW0423_09252024	FC19279-24	groundwater	S4VM
LORNG_OW16002_09252024	FC19279-25	groundwater	S4VM
LORNG_BW01006_09272024	FC19279-26	groundwater	S4VM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW10006_09262024	FC19279-27	groundwater	S4VM
LORNG_JMW-0406_09262024	FC19279-28	groundwater	S4VM
LORNG_JMW-0416B_09252024	FC19279-29	groundwater	S4VM
LORNG_JMW0445_09252024	FC19279-30	groundwater	S4VM
LORNG_JMW0992_09302024	FC19279-31	groundwater	S4VM
LORNG_JPZ1780_09262024	FC19279-32	groundwater	S2BVM
LORNG_OW14004_09262024	FC19279-33	groundwater	S2BVM
LORNG_044-RW01_09252024	FC19279-34	groundwater	S2BVM
LORNG_JBW7203A_09262024	FC19279-35	groundwater	S2BVM
LORNG_JMW-0602_09252024FD	FC19279-36	groundwater	S2BVM
LORNG_JPZ0348_09262024FD	FC19279-37	groundwater	S2BVM
LORNG_OW09001_09262024	FC19279-38	groundwater	S2BVM
LORNG_OW12002_09262024	FC19279-39	groundwater	S2BVM
LORNG_OW21005_09302024	FC19279-40	groundwater	S2BVM
LORNG_OW21005_09302024FD	FC19279-41	groundwater	S2BVM
LORNG_BW10007_09262024	FC19279-42	groundwater	S2BVM
LORNG_BW17004_09262024	FC19279-43	groundwater	S2BVM
LORNG_BW22001_09252024	FC19279-44	groundwater	S2BVM
LORNG_JBW7203B_09262024	FC19279-45	groundwater	S2BVM
LORNG_JMW1981_09262024	FC19279-46	groundwater	S2BVM
LORNG_JPZ0348_09262024	FC19279-47	groundwater	S2BVM
LORNG_JPZ0686_09262024	FC19279-48	groundwater	S2BVM
LORNG_OW09001_09262024FD	FC19279-49	groundwater	S2BVM
LORNG_OW10007_09252024	FC19279-50	groundwater	S2BVM
LORNG_BW18009_09262024	FC19279-51	groundwater	S2BVM
LORNG_EB001_09272024	FC19279-52	equipment blank	S2BVM
LORNG_GC_BW001_09262024	FC19279-53	groundwater	S2BVM
LORNG_GC_BW002S_09262024	FC19279-54	groundwater	S2BVM
LORNG_JBW7734_09262024	FC19279-55	groundwater	S2BVM
LORNG_JBW7734_09262024FD	FC19279-56	groundwater	S2BVM
LORNG_JMW6001_09262024	FC19279-57	groundwater	S2BVM
LORNG_JMW6001_09262024FD	FC19279-58	groundwater	S2BVM
LORNG_OW23001_09262024	FC19279-59	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion related to the results reported by the validator.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB001_09272024 was submitted as an equipment blank in association with samples LORNG_BW02001_09272024 and LORNG_BW02002_09272024. No problems were found for this criterion.

Sample LORNG_EB002_09302024 was submitted as an equipment blank in association with the samples listed in the table below. No problems were found for this criterion.

LORNG_MMW0018B_09302024	*LORNG_JMW0992_09302024*
LORNG_MMW0018B_09302024FD	*LORNG_BW03001_09302024*

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion with the following exceptions.

The observed isotope dilution standard recovery for 13C5-PFPeA was lower than the lowest acceptance limit but greater than 10% during the analysis of sample LORNG_BW16002_09262024. The results reported for the associated target analytes in the

impacted sample have been qualified "UJ" on this basis. Additionally, the observed isotope dilution standard recovery for 13C4-PFBA was extremely low (less than 10%). The result reported for the impacted analyte in the associated sample has been qualified rejected "R" on this basis.

The observed isotope dilution standard recoveries for the standards listed in the table below were lower than the lowest acceptance limit but greater than 10% during the analysis of sample LORNG_JPZ1780_09262024. The results reported for the associated target analytes in the impacted sample have been qualified "J" or "UJ" as appropriate on this basis.

13C6-PFDA	*13C7-PFUnDA*	*13C8-PFOS*	*13C8-FOSA*	*d3-MeFOSAA*	*d5-EtFOSAA*

Additionally, the observed isotope dilution standard recoveries for the analytes listed in the table below were extremely low (less than 10%). The non-detected results reported for the associated target analytes in the impacted sample have been qualified rejected "R" on this basis.

13C2-PFDoDA	*13C2-PFTeDA*	*d5-EtFOSA*	*d7-MeFOSE*	*d9-EtFOSE*

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of Level 2B and Level 4 data validation. No anomalies were identified with the following exceptions.

The transition mass ratio was outside the established ratio limits for PFNS during the analysis of sample LORNG_JMW-0406_09262024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratios were outside the established ratio limits for PFBA during the analyses of the samples listed in the table below indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

LORNG_JMW6001_09262024FD	*LORNG_JMW-0602_09252024*
LORNG_SB/OW16001_09252024FD	*LORNG_SB/OW16001_09252024*

The transition mass ratios were outside the established ratio limits for PFBA and PFPeA during the analysis of sample LORNG_JMW0445_09252024 indicating some degree of uncertainty in the qualitative identification of the analytes. The impacted results have been qualified "J" on this basis.

Additional target compound identification criterion was verified as part of the Level 4 data validation. No anomalies were identified.

9. COMPOUND QUANTIFICATION

Target compound quantitation was verified as part of the Level 4 data validation. No anomalies were identified.

Manual integrations were reviewed at the Stage 4 level. No anomalies were identified.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_OW12002_09262024 was submitted for MS evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy indicators were acceptable.

Sample LORNG_MMW0326_09252024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_JPZ1780_09262024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_OW21005_09302024 was submitted for laboratory duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated with the exception of PFOS. The result reported for the impacted analyte in the parent sample has been qualified "J" on this basis.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_BW16001_09252024 and LORNG_BW16001_09252024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_JBW7734_09262024 and LORNG_JBW7734_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_JMW-0602_09252024 and LORNG_JMW-0602_09252024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_JMW6001_09262024 and LORNG_JMW6001_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated with the exceptions of PFHxA, PFHpA, and PFOA. The results reported for the impacted analytes in the field duplicate samples have been qualified "J" on this basis.

Samples LORNG_JPZ0348_09262024 and LORNG_JPZ0348_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_MMW0018B_09302024 and LORNG_MMW0018B_09302024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_OW09001_09262024 and LORNG_OW09001_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_OW21005_09302024 and LORNG_OW21005_09302024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB/OW16001_09252024 and LORNG_SB/OW16001_09252024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_BW10006_09262024 and LORNG_BW10006_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted as necessary to confirm quality control results.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_BW10007_09262024 was submitted for split sample analyses. The sample was also analyzed by Bureau Veritas. The split sample results are located in SDG C4V7274. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards		x	x
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate			x
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate			x

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS8Q
Curve Date: 11/6/2024
Compound: PFBA
Internal Standard: 13C4-PFBA

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
1848	74721	0.8	10	0.024732003	0.08	0.0064	0.309
3553	69451	1.6	10	0.051158371	0.16	0.0256	0.320
12294	73248	5	10	0.16784076	0.5	0.25	0.336
25834	75551	10	10	0.341941205	1	1	0.342
50105	70284	20	10	0.712893404	2	4	0.356
125529	66868	50	10	1.877265658	5	25	0.375
247314	65197	100	10	3.793334049	10	100	0.379
576779	60673	250	10	9.506353732	25	625	0.380
SUM OF EACH COLUMN :				16.4755	43.74	755.282	2.7980

CALIBRATION MODELS:

Average Response Factor:
Cx = Ax*Cis/Ais/RF

			Results
Average RF	0.350	AVERAGE(RF)	0.3497
RSD	7.9%	STDEV(RF)/(AveRF)	7.884

Linear Regression:

y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
Slope (m)	0.38122	0.37853	0.36457	SLOPE(RatioY,RatioX)
Intercept (b)	-0.02488	-0.01019	-0.005250	INTERCEPT(RatioY,RatioX)
CC (R)	0.99999	0.99983	0.99893	CORREL(RatioY,RatioX)
COD (R^2)	0.99998	0.99967	0.99787	POWER(R,2)

Quadratic Regression:

$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
x^2 Coefficient (a)	0.00004	-0.00032	0.00353	LINEST(RatioY,RatioX:RatioX^2,1,1)
x Coefficient (b)	0.38023	0.38913	0.31473	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
Intercept (c)	-0.02328	-0.03762	0.00557	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
COD (R^2)	0.99998			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S8Q196-ICV196	8Q14140.D	24672	71004	10	9.935	9.767	9.449	9.675	9.750	9.904	10.734	9.93
S8Q196-CC196	8Q14143.D	1785	73906	10	0.691	1.286	0.907	0.806	1.247	1.588	0.590	0.69
FC19279-20	8Q14206.D	5957	67170	10	2.536	2.979	2.612	2.577	2.945	3.247	2.633	2.54
FC19279-30	8Q14218.D	25794	46238	10	15.950	15.286	15.006	15.445	15.281	15.322	17.216	15.95
OP5934-MB	8Q14205.D	ND	77896	10	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	ND
OP5934-BS	8Q14203.D	23080	71315	10	9.253	9.142	8.819	9.021	9.123	9.291	9.994	9.25
					#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
					#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS8Q
Curve Date: 11/6/2024
Compound: 13C4-PFBA
Internal Standard: M4-PFBA

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
74721	39660	10	5	1.883611888	2	4	0.942
69451	37016	10	5	1.876242706	2	4	0.938
73248	39187	10	5	1.869191313	2	4	0.935
75551	40048	10	5	1.886511187	2	4	0.943
70284	36801	10	5	1.909839407	2	4	0.955
66868	35445	10	5	1.886528424	2	4	0.943
65197	34331	10	5	1.899070811	2	4	0.950
60673	32046	10	5	1.893309617	2	4	0.947
SUM OF EACH COLUMN :				15.1043	16	32	7.5522

CALIBRATION MODELS:

			reported
Average Response Factor:	**Average RF**	0.944 **AVERAGE(RF)**	0.944
Cx = Ax*Cis/Ais/RF	**RSD**	0.7% **STDEV(RF)/(AveRF)**	0.676

Linear Regression:

y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
Slope (m)	#DIV/0!	#DIV/0!	#DIV/0!	SLOPE(RatioY,RatioX)
Intercept (b)	#DIV/0!	#DIV/0!	#DIV/0!	INTERCEPT(RatioY,RatioX)
CC (R)	#DIV/0!	#DIV/0!	#DIV/0!	CORREL(RatioY,RatioX)
COD (R^2)	#DIV/0!	#DIV/0!	#DIV/0!	POWER(R,2)

Quadratic Regression:

$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
x^2 Coefficient (a)	0.00000	#DIV/0!	#DIV/0!	LINEST(RatioY,RatioX:RatioX^2,1,1)
x Coefficient (b)	0.00000	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
Intercept (c)	1.88804	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
COD (R^2)	0.37273			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S8Q196-ICV196	8Q14140.D	71004	37217	5	10.105	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	10.1
S8Q196-CC196	8Q14143.D	73906	38547	5	10.155	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	10.16
FC19279-20	8Q14206.D	67170	43631	5	8.154	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	8.15
FC19279-30	8Q14218.D	46238	32032	5	7.645	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	7.65
OP5934-MB	8Q14205.D	77896	42681	5	9.667	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.67
OP5934-BS	8Q14203.D	71315	44300	5	8.526	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	8.53
					#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!	#DIV/0!	
					#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

Final Sample Result Calculation

PFAS
method 1633

on column result (ng/ml) x final volume(ml)/initial sample amount (g) x 1 g/ 1 ml x 1000g/1 ml x dilution factor = calculated result

density of water = 1g/1ml

Sample	Analyte	On column results (ug/L)	Final Prep Volume (ml)	Initial Sample amount (ml)	Dilution Factor	Calculate result (ng/L)	Reported Result (ng/L)
FC19279-20	PFBA	2.54	5	550	1	23.09090909	23.1
FC19279-30	PFBA	15.95	5	550	1	145	145

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DLW

Date Validated: 01/03/2025

Reviewed: 1/16/25

Project: Loring AFB

SDG: FC19279

LAB: SGS Orlando

Samples Collected: 09/25/2024 – 09/27/2024, and 09/30/2024

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SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/2 at 4.2 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 09/25/2024 – 09/27/2024, and 09/30/2024
Extracted 10/18/2024; 10/19/2024; 10/21/2024; 11/06/2024 ok
REs on 11/13/2024 and 11/15/2024 past hold time; not reported
Analyzed 11/07/2024; 11/08/2024; 11/11/2024; 11/15/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_BW16002_09262024 FC19279-12

13C4-PFBA <10%	PFBA	FLAG R
13C5-PFPeA ↓	PFPeA, PFMPA, PFMBA, 3:3 FTCA	FLAG UJ

LORNG_JPZ1780_09262024 FC19279-32

13C6-PFDA ↓	PFDA	FLAG UJ
13C7-PFUnDA ↓	PFUnA	FLAG UJ
13C2-PFDoDA <10%	PFDOA	FLAG R
13C2-PFTeDA <10%	PFTeDA, PFTrDA	FLAG R
13C8-PFOS ↓	PFHpS, PFOS, PFNS, PFDS, PFDoS	FLAG J/UJ
13C8-FOSA ↓	PFOSA	FLAG UJ
d5-EtFOSA <10%	NEtFOSA	FLAG R
d3-MeFOSAA ↓	NMeFOSAA	FLAG UJ
d5-EtFOSAA ↓	NEtFOSAA	FLAG UJ
d7-MeFOSE <10%	NMeFOSE	FLAG R
d9-EtFOSE <10%	NEtFOSE	FLAG R

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5908-LLBS	ok
OP5934-LLBS	ok
OP5944-LLBS	ok
OP5935-LLBS	ok
OP5908-BS	ok
OP5934-BS	ok
OP5944-BS	ok
OP5935-BS	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

FC19279-39	**LORNG_OW12002_09262024**	**MS only**	**ok**
FC19279-5	**LORNG_MMW0326_09252024**	**MS/MSD**	**ok**
FC19279-32	**LORNG_JPZ1780_09262024**	**MS/MSD**	**ok**

Matrix Duplicate:

FC19279-40	**LORNG_OW21005_09302024**	**1763-23-1 PFOS**	**flag J**

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs

LORNG_EB001_09272024	associated with	LORNG_BW02001_09272024
All ND		LORNG_BW02002_09272024
LORNG_EB002_09302024	associated with	LORNG_MMW0018B_09302024
All ND		LORNG_MMW0018B_09302024FD
		LORNG_JMW0992_09302024
		LORNG_BW03001_09302024

OP5908-MB	all ND
OP5934-MB	all ND
OP5944-MB	all ND
OP5935-MB	all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS3T

11/06/24 all %RSD <20%

S3T5-IBLK 3T260.D 11/06/24 17:45 n/a Instrument Blank
S3T5-ICV5 3T261.D 11/06/24 18:00 n/a Initial cal verification 4
S3T5-ICV5 3T262.D 11/06/24 18:15 n/a Initial cal verification 20
S3T5-CC5 3T263.D 11/06/24 18:30 n/a Continuing cal 4
S3T5-CC5 3T264.D 11/06/24 18:45 n/a Continuing cal 1.0LL

Samples 58 and 59

S3T5-CC5 3T275.D 11/06/24 21:31 n/a Continuing cal 4

11/10/24 all %RSD <20%

S3T7-IBLK 3T412.D 11/10/24 20:20 n/a Instrument Blank
S3T7-ICV7 3T413.D 11/10/24 20:36 n/a Initial cal verification 4
S3T7-ICV7 3T414.D 11/10/24 20:51 n/a Initial cal verification 20

S3T7-CC7 3T435.D 11/11/24 02:06 n/a Continuing cal 4
S3T7-ICCB 3T436.D 11/11/24 02:21 n/a Continuing Calibration Blank

Samples 39,40,41,42,43

S3T7-CC7 3T447.D 11/11/24 05:07 n/a Continuing cal 4
S3T7-ICCB 3T448.D 11/11/24 05:22 n/a Continuing Calibration Blank

Samples 44,45,46,47,48,49,50,51,52,53

S3T7-ECC7 3T459.D 11/11/24 08:07 n/a Ending cal 4
S3T7-ICCB 3T460.D 11/11/24 08:22 n/a Continuing Calibration Blank

11/11/24 all %RSD <20%

S3T8-IBLK 3T488.D 11/11/24 15:28 n/a Instrument Blank
S3T8-ICV8 3T489.D 11/11/24 15:43 n/a Initial cal verification 4
S3T8-ICV8 3T490.D 11/11/24 15:58 n/a Initial cal verification 20
S3T8-CC8 3T491.D 11/11/24 16:13 n/a Continuing cal 4
S3T8-CC8 3T492.D 11/11/24 16:29 n/a Continuing cal 1.0LL

Samples 54,55,56,57

S3T8-CC8 3T503.D 11/11/24 19:14 n/a Continuing cal 4

Instrument GCMS7Q

11/14/24 all %RSD <20%

S7Q193-ICV193 7Q13663.D 11/14/24 13:32 n/a Initial cal verification 4
S7Q193-ICV193 7Q13664.D 11/14/24 13:46 n/a Initial cal verification 20
EtFOSAA >30% associated not reported
S7Q193-CC193 7Q13725.D 11/15/24 03:59 n/a Continuing cal 4
S7Q193-ICCB 7Q13726.D 11/15/24 04:13 n/a Continuing Calibration Blank

Samples 12,32 9 (not reported)

S7Q193-CC193 7Q13736.D 11/15/24 06:33 n/a Continuing cal 4

Instrument GCMS8Q

11/06/24 all %RSD <20%
S8Q196-IBLK 8Q14139.D 11/06/24 14:18 02:31 Instrument Blank
4151-50-2 EtFOSA 0.0016 J ug/L ND; no action
S8Q196-ICV196 8Q14140.D 11/06/24 14:32 n/a Initial cal verification 4
S8Q196-ICV196 8Q14141.D 11/06/24 14:50 n/a Initial cal verification 4
S8Q196-CC196 8Q14142.D 11/06/24 15:04 n/a Continuing cal 4
S8Q196-CC196 8Q14143.D 11/06/24 15:18 n/a Continuing cal 1.0LL

S8Q197-CC196 8Q14201.D 11/07/24 14:09 n/a Continuing cal 4
S8Q197-IBLK 8Q14190.D
4151-50-2 EtFOSA 0.0014 J ug/L ND; no action
S8Q197-ICCB 8Q14202.D 11/07/24 14:23 n/a Continuing Calibration Blank

Samples 20,21,22,23,24,25,26

S8Q197-CC196 8Q14213.D 11/07/24 16:54 n/a Continuing cal 4
S8Q197-ICCB 8Q14214.D 11/07/24 17:08 n/a Continuing Calibration Blank

Samples 27,28,29,30,31,32,33,34

S8Q197-CC196 8Q14225.D 11/07/24 19:39 n/a Continuing cal 4
S8Q197-ICCB 8Q14226.D 11/07/24 19:53 n/a Continuing Calibration Blank

Samples 35,36,37,38,1,2,3

S8Q197-CC196 8Q14237.D 11/07/24 22:25 n/a Continuing cal 4
S8Q197-ICCB 8Q14238.D 11/07/24 22:38 n/a Continuing Calibration Blank

Samples 4,5,6,7,8,9,10,11

S8Q197-CC196 8Q14249.D 11/08/24 01:10 n/a Continuing cal 4
S8Q197-ICCB 8Q14250.D 11/08/24 01:23 n/a Continuing Calibration Blank

Samples 12,13,14,15,16,17,18,19

S8Q197-ECC196 8Q14259.D 11/08/24 03:27 n/a Ending cal 4
S8Q197-ICCB 8Q14260.D 11/08/24 03:41 n/a Continuing Calibration Blank

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_JMW6001_09262024FD	FC19279-58	PFBA	FLAG J
LORNG_JMW-0602_09252024	FC19279-4	PFBA	FLAG J
LORNG_SB/OW16001_09252024FD	FC19279-8	PFBA	FLAG J
LORNG_SB/OW16001_09252024	FC19279-17	PFBA	FLAG J
LORNG_JMW-0406_09262024	FC19279-28	PFNS	FLAG J
LORNG_JMW0445_09252024	FC19279-30	PFBA, PFPeA	FLAG J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_BW16001_09252024 and LORNG_BW16001_09252024FD all ok

LORNG_JBW7734_09262024 and LORNG_JBW7734_09262024FD all ok

LORNG_JMW-0602_09252024 and LORNG_JMW-0602_09252024FD all ok

LORNG_JMW6001_09262024 and LORNG_JMW6001_09262024FD PFHxA, PFHpA, PFOA

LORNG_JPZ0348_09262024 and LORNG_JPZ0348_09262024FD all ok

LORNG_MMW0018B_09302024 and LORNG_MMW0018B_09302024FD all ok

LORNG_OW09001_09262024 and LORNG_OW09001_09262024FD all ok

LORNG_OW21005_09302024 and LORNG_OW21005_09302024FD all ok

LORNG_SB/OW16001_09252024 and LORNG_SB/OW16001_09252024FD all ok

LORNG_BW10006_09262024 and LORNG_BW10006_09262024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19279											
		Location		044-RW01	BW01006	BW03001	BW10006		BW10007	BW14005	BW16001		BW16002	BW17004	
		Sample Date		9/25/2024	9/27/2024	9/30/2024	9/26/2024		9/26/2024	9/25/2024	9/25/2024		9/26/2024	9/26/2024	
		Sample ID		LORNG_044-RW01_09252024	LORNG_BW01006_09272024	LORNG_BW03001_09302024	LORNG_BW10006_09262024	LORNG_BW10006_09262024FD	LORNG_BW10007_09262024	LORNG_BW14005_09252024	LORNG_BW16001_09252024	LORNG_BW16001_09252024FD	LORNG_BW16002_09262024	LORNG_BW17004_09262024	
		QC Code		N	N	N	N	FD	N	N	N	FD	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	4.2 J	4.3 U	4.2 J	4.3 J	3.7 U	4.9 J	3.7 U	3.6 U	R	3.8 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	7.1 J	2.1 U	6.8 J	6.7 J	1.9 U	6.9 J	1.9 U	1.8 U	1.9 UJ	3.1 J	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	6.6	2.1 U	8.1	8	1.9 U	9.3	1.9 U	1.8 U	2.2 J	2.9 J	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	5.5	2.1 U	3 J	3.4 J	0.52 J	3.4 J	1.9 U	1.8 U	1.9 U	1.7 J	
		Perfluorooctanoic acid (PFOA)	NG/L	0.91 U	7	1.1 U	7	8	0.66 J	8.4	0.93 U	0.89 U	0.94 U	2.7 J	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1 J	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	2.1 J	2.1 U	2.2 J	2.1 J	1.9 U	2.7 J	1.9 U	1.8 U	1.9 U	0.56 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6 U	2.2 J	4.3 U	2.6 J	2.8 J	3.7 U	3.4 J	3.7 U	3.6 U	3.8 U	3.8 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	35.9	2.1 U	34.7	36.2	2.2 J	40.8	1.9 U	1.8 U	0.91 J	9.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	0.91 J	2.1 U	0.81 J	0.88 J	1.9 U	1.3 J	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	26.8	2.1 U	28.1	31.3	1.5 J	37.5	1.9 U	1.8 U	1.8 J	4.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3 U	7.3 U	8.5 U	7.3 U	7.2 U	7.5 U	7.2 U	7.5 U	7.1 U	7.5 U	7.7 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3 U	7.4 J	8.5 U	3.5 J	7.2 U	7.5 U	7.2 U	7.5 U	7.1 U	25.4	7.7 U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3 U	7.3 U	8.5 U	7.3 U	7.2 U	7.5 U	7.2 U	7.5 U	7.1 U	7.5 U	7.7 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 U	18 U	21 U	18 U	18 U	19 U	18 U	19 U	18 U	19 U	19 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 U	18 U	21 U	18 U	18 U	19 U	18 U	19 U	18 U	19 U	19 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 UJ	1.9 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 UJ	3.8 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.6 U	4.3 U	3.6 U	3.6 U	3.7 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.8 U	2.1 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1 U	9.1 U	11 U	9.1 U	9 U	9.3 U	9 U	9.3 U	8.9 U	9.4 UJ	9.6 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	18 U	21 U	18 U	18 U	19 U	18 U	19 U	18 U	19 U	19 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U	18 U	21 U	18 U	18 U	19 U	18 U	19 U	18 U	19 U	19 U	

Prepared by: AKN
Date: 1/21/25
Checked by:TC
Date:2/12/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19279																	
			Location	BW18003		BW18009		BW22001		FIELDQC				GC_BW001		GC_BW002S		JBW7203A		JBW7203B		JBW7710	
			Sample Date	9/25/2024		9/26/2024		9/25/2024		9/27/2024		9/30/2024		9/26/2024		9/26/2024		9/26/2024		9/26/2024		9/26/2024	
			Sample ID	LORNG_BW18003_09252024		LORNG_BW18009_09262024		LORNG_BW22001_09252024		LORNG_EB001_09272024		LORNG_EB002_09302024		LORNG_GC_BW001_09262024		LORNG_GC_BW002S_09262024		LORNG_JBW7203A_09262024		LORNG_JBW7203B_09262024		LORNG_JBW7710_09262024	
			QC Code	N		N		N		EB		EB		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	7.9	J	4.7	J	10.9	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	12.7		8.5		13.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	9.4		6.4		10.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	6.4		3.9		5.9	
		Perfluorooctanoic acid (PFOA)	NG/L	0.9	U	0.92	J	0.92	U	0.96	U	0.89	U	0.93	U	0.92	U	7		5		8.1	
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	2.2	J	1.9	U	0.73	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	0.78	J	1.9	U	2.3	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	0.73	J	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	2.1	J	1.9	J	2.7	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	2.9	J	3	J	3.7	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.8	J	10.1		2.2	J	1.9	U	1.8	U	1.9	U	1.8	U	23.2		23.9		42.2	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	0.89	J	1.9	U	1.1	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.4	J	2.8	J	1.7	J	1.9	U	1.8	U	1.9	U	1.8	U	31.7		25.2		39.2	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.2	U	7.5	U	7.3	U	7.7	U	7.1	U	7.5	U	7.3	U	7.3	U	7.5	U	9.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.2	U	7.5	U	7.3	U	7.7	U	7.1	U	7.5	U	7.3	U	7.3	U	7.5	U	12.2	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.2	U	7.5	U	7.3	U	7.7	U	7.1	U	7.5	U	7.3	U	7.3	U	7.5	U	9.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U	19	U	23	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U	19	U	23	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.7	U	3.7	U	3.8	U	3.6	U	3.7	U	3.7	U	3.6	U	3.7	U	4.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.3	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9	U	9.3	U	9.2	U	9.6	U	8.9	U	9.3	U	9.2	U	9.1	U	9.3	U	12	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U	19	U	23	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U	19	U	23	U

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Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19279																	
			Location	JBW7734		JBW7752	JMW0010	JMW-0406	JMW-0416B	JMW0445	JMW-0602				JMW0992	JMW1981					
			Sample Date	9/26/2024		9/25/2024	9/25/2024	9/26/2024	9/25/2024	9/25/2024	9/25/2024				9/30/2024	9/26/2024					
			Sample ID	LORNG_JBW7734_09262024		LORNG_JBW7752_09252024	LORNG_JMW0010_09252024	LORNG_JMW-0406_09262024	LORNG_JMW-0416B_09252024	LORNG_JMW0445_09252024	LORNG_JMW-0602_09252024		LORNG_JMW-0602_09252024FD		LORNG_JMW0992_09302024	LORNG_JMW1981_09262024					
			QC Code	N		N	N	N	N	N	N		FD		N	N					
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.7	J	4.8	J	2.3	J	3.6	U	6.6	J	3	J	145	J	14.2	J	5.2	J	4.1	U	4.4	J
		Perfluoropentanoic acid (PFPeA)	NG/L	5.6	J	6.1	J	1.5	J	1.8	U	6.6	J	4.4	J	13.1	J	1.8	J	2.2	J	2.1	U	8.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	7.1		6.5		1.6	J	1.8	U	4.3		1.9	J	6.7		3.3	J	3.1	J	2.1	U	6	
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.7		5.8		1.1	J	1.8	U	4.1		1.8	U	3.8		1.4	J	1.1	J	2.1	U	3.5	J
		Perfluorooctanoic acid (PFOA)	NG/L	6.2		6.8		1.1	J	0.89	U	5.1		0.6	J	9.9		4.3	J	4.2	J	1.4	J	4.4	
		Perfluorononanoic acid (PFNA)	NG/L	0.79	J	0.9	J	1.8	U	1.8	U	3	J	1.8	U	1.8	J	2.4	U	2.3	U	2.1	U	0.6	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.4	J	2.2	J	0.82	J	1.8	U	2.3	J	1.8	U	2.2	J	1.2	J	1.2	J	2.1	U	2.2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.4	J	3.4	J	3.6	U	3.6	U	4	J	3.6	U	2.4	J	1.4	J	1.5	J	4.1	U	2.9	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	48.8		48.6		3.9		1.8	U	62.5		1.7	J	33.6		15.5		15.2		2.1	J	24.5	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7	J	1.8	J	1.8	U	1.8	U	1.6	J	1.8	U	1.1	J	2.4	U	2.3	U	2.1	U	1.2	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	50.5		52.7		3.4	J	1.8	U	109		1.4	J	32.4		20.1		18.4		1.3	J	26	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	1.5	J	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.8	U	7.8	U	7.1	U	7.1	U	7.8	U	7.3	U	7.3	U	9.6	U	9.1	U	8.2	U	7.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.8	U	7.8	U	7.8	J	7.1	U	7.8	U	7.3	U	7.3	U	9.6	U	3.9	J	8.2	U	7.2	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U	7.8	U	7.1	U	7.1	U	7.8	U	7.3	U	7.3	U	9.6	U	9.1	U	8.2	U	7.2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	18	U	18	U	20	U	18	U	18	U	24	U	23	U	21	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	18	U	18	U	20	U	18	U	18	U	24	U	23	U	21	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U	3.9	U	3.6	U	3.6	U	3.9	U	3.6	U	3.6	U	4.8	U	4.5	U	4.1	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.8	U	1.8	U	2	U	1.8	U	1.8	U	2.4	U	2.3	U	2.1	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.7	U	9.7	U	8.9	U	8.9	U	9.8	U	9.1	U	9.1	U	12	U	11	U	10	U	9	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	18	U	18	U	20	U	18	U	18	U	24	U	23	U	21	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	18	U	18	U	20	U	18	U	18	U	24	U	23	U	21	U	18	U

Prepared by: AKN
Date: 1/21/25
Checked by:TC
Date:2/12/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19279																			
			Location	JMW3102		JMW6001				JPZ0348				JPZ0686		JPZ1780		JPZ7601		MMW0009		MMW0018B	
			Sample Date	9/25/2024		9/26/2024				9/26/2024				9/26/2024		9/26/2024		9/25/2024		9/25/2024		9/30/2024	
			Sample ID	LORNG_JMW3102_09252024		LORNG_JMW6001_09262024		LORNG_JMW6001_09262024FD		LORNG_JPZ0348_09262024		LORNG_JPZ0348_09262024FD		LORNG_JPZ0686_09262024		LORNG_JPZ1780_09262024		LORNG_JPZ7601_09252024		LORNG_MMW0009_09252024		LORNG_MMW0018B_09302024		LORNG_MMW0018B_09302024FD	
			QC Code	N		N		FD		N		FD		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	23.1		12.4	J	23	J	6.3	J	8.8	J	3.7	J	4.6	J	10.8	J	3.8	U	4.3	U	4.3	U
		Perfluoropentanoic acid (PFPeA)	NG/L	61.3		13.1		16.7		17.3		21.9		3.7	J	6	J	10.1		1.9	U	2.2	U	2.2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	46.8		10.7	J	16	J	23.9		30.3		2	U	7.7		4.5	J	0.86	J	2.2	U	2.2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	3	J	7.8	J	10.8	J	8.9		11.3		0.79	J	4.2		3.3	J	1.9	U	2.2	U	2.2	U
		Perfluorooctanoic acid (PFOA)	NG/L	3.8		9.8	J	14.6	J	27.4		33.7		2	J	7.9		3	J	1.5	J	1.1	U	1.1	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	2.7	J	3.4	J	0.87	J	1.2	J	2	U	1	J	0.82	J	1.9	U	2.2	U	2.2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	0.63	J	1.9	U	1.8	U	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	R		2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	R		2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	R		2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.4	J	2.7	J	2.6	J	3.9		4.4		0.9	J	2	J	1.3	J	0.68	J	2.2	U	2.2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.6	J	4.5	J	5		6.2		4	U	4.3	J	5	U	3.8	U	4.3	U	4.3	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.98	J	47.2		57.3		164		187		5.9		50.5		7.8		8.5		2.2	U	2.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	2.2	J	2.5	J	2.5	J	2.7	J	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	70.8		85		73.7		95.7		4.9		37.4	J	7.5		2.7	J	2.6	J	2.6	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	UJ	5	U	3.8	U	4.3	U	4.3	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.5	U	7.5	U	7.5	U	7.3	U	7.9	U	7.6	U	10	U	7.7	U	8.6	U	8.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	17.7	J	19.4		7.5	U	7.3	U	7.9	U	7.6	U	10	U	7.7	U	8.6	U	8.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.5	U	7.5	U	7.5	U	7.3	U	7.9	U	7.6	U	10	U	7.7	U	8.6	U	8.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.9	U	3	J	3.1	J	2	U	1.9	UJ	2.5	U	1.9	U	2.2	U	2.2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	R	5	U	3.8	U	4.3	U	4.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	UJ	5	U	3.8	U	4.3	U	4.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	UJ	5	U	3.8	U	4.3	U	4.3	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	19	U	19	U	19	U	18	U	20	U	R		25	U	19	U	22	U	22	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	19	U	19	U	19	U	18	U	20	U	R		25	U	19	U	22	U	22	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U	2.5	U	1.9	U	2.2	U	2.2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U	2.5	U	1.9	U	2.2	U	2.2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.7	U	3.8	U	3.8	U	3.6	U	4	U	3.8	U	5	U	3.8	U	4.3	U	4.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U	2.5	U	1.9	U	2.2	U	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.3	U	9.4	U	9.4	U	9.1	U	9.9	U	9.5	U	13	U	9.6	U	11	U	11	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	19	U	19	U	19	U	18	U	20	U	19	U	25	U	19	U	22	U	22	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	19	U	19	U	19	U	18	U	20	U	19	U	25	U	19	U	22	U	22	U

Prepared by: AKN
Date: 1/21/25
Checked by:TC
Date:2/12/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19279									
		Location		OW22001		OW22003		OW23001		SB/OW16001			
		Sample Date		9/25/2024		9/25/2024		9/26/2024		9/25/2024			
		Sample ID		LORNG_OW22001_09252024		LORNG_OW22003_09252024		LORNG_OW23001_09262024		LORNG_SB/OW16001_09252024		LORNG_SB/OW16001_09252024FD	
		QC Code		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.6	U	6.6	J	12.6	J	11.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	0.93	J	1.6	J	11.7		4.8	J	4.7	J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.5	J	1.3	J	8.9		5.3		5.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.77	J	0.85	J	6		2.4	J	2	J
		Perfluorooctanoic acid (PFOA)	NG/L	2.3	J	1.7	J	6.3		6.8		6.1	
		Perfluorononanoic acid (PFNA)	NG/L	0.66	J	1.8	U	0.93	J	1.1	J	1.1	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	0.51	J	2.3	J	1.2	J	1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.6	U	3.3	J	3.7	U	3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13.2		14.3		29.1		12.6		11.2	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.53	J	1.8	U	0.99	J	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	36.7		15.6		27		14.4		13.8	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.2	U	7.2	U	7.3	U	7.4	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.2	U	3.8	J	7.3	U	7.4	U	7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.2	U	7.2	U	7.3	U	7.4	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	18	U	18	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	18	U	18	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.6	U	3.6	U	3.7	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9	U	9	U	9.1	U	9.3	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	18	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	18	U	19	U	19	U

Prepared by: AKN
Date: 1/21/25
Checked by:TC
Date:2/12/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19279	E1633DR	T	FC19279-12	LORNG_BW16002_09262024	Perfluorobutanoic acid (PFBA)	3.8	U		R	IDG	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.8	U	3.8	UJ	IDG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.4	U	9.4	UJ	IDG	NG/L
			FC19279-28	LORNG_JMW-0406_09262024	Perfluorononanesulfonic acid (PFNS)	1.5	J	1.5	J	IAG	NG/L
			FC19279-30	LORNG_JMW0445_09252024	Perfluorobutanoic acid (PFBA)	145	=	145	J	IAG	NG/L
					Perfluoropentanoic acid (PFPeA)	13.1	=	13.1	J	IAG	NG/L
			FC19279-4	LORNG_JMW-0602_09252024	Perfluorobutanoic acid (PFBA)	14.2	J	14.2	J	IAG	NG/L
			FC19279-57	LORNG_JMW6001_09262024	Perfluorohexanoic acid (PFHxA)	10.7	=	10.7	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	7.8	=	7.8	J	FDD	NG/L
					Perfluorooctanoic acid (PFOA)	9.8	=	9.8	J	FDD	NG/L
			FC19279-58	LORNG_JMW6001_09262024FD	Perfluorobutanoic acid (PFBA)	23	=	23	J	IAG	NG/L
					Perfluorohexanoic acid (PFHxA)	16	=	16	J	FDD	NG/L
					Perfluoroheptanoic acid (PFHpA)	10.8	=	10.8	J	FDD	NG/L
					Perfluorooctanoic acid (PFOA)	14.6	=	14.6	J	FDD	NG/L
			FC19279-32	LORNG_JPZ1780_09262024	Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluorododecanoic acid (PFDoA)	1.9	U		R	IDG	NG/L
					Perfluorotridecanoic acid (PFTrDA)	1.9	U		R	IDG	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	1.9	U		R	IDG	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluorooctanesulfonic acid (PFOS)	37.4	=	37.4	J	IDG	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	IDG	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	3.8	U	3.8	UJ	IDG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	U	1.9	UJ	IDG	NG/L
FC19279	E1633DR	T	FC19279-32	LORNG_JPZ1780_09262024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U		R	IDG	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.8	U	3.8	UJ	IDG	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	IDG	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U		R	IDG	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U		R	IDG	NG/L
			FC19279-40	LORNG_OW21005_09302024	Perfluorooctanesulfonic acid (PFOS)	54.2	=	54.2	J	LDD	NG/L
			FC19279-17	LORNG_SB/OW16001_09252024	Perfluorobutanoic acid (PFBA)	12.6	J	12.6	J	IAG	NG/L
			FC19279-8	LORNG_SB/OW16001_09252024FD	Perfluorobutanoic acid (PFBA)	11.6	J	11.6	J	IAG	NG/L

Prepared by:AKN
Date:1/21/25
Checked by:
Date: TC 2/12/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19279	LORNG_BW16001_09252024	LORNG_BW16001_09252024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.93	U	0.89	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.1	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	8.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	

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Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
FC19279	LORNG_JBW7734_09262024	LORNG_JBW7734_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.7	J	4.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.6	J	6.1	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.1		6.5		9	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.7		5.8		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.2		6.8		9	
				Perfluorononanoic acid (PFNA) (NG/L)	0.79	J	0.9	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.4	J	2.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.4	J	3.4	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	48.8		48.6		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.7	J	1.8	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	50.5		52.7		4	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.7	U	9.7	U	NC	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC19279	LORNG_JMW-0602_09252024	LORNG_JMW-0602_09252024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	14.2	J	5.2	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	J	2.2	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.3	J	3.1	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.4	J	1.1	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.3	J	4.2	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.2	J	1.2	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.4	J	1.5	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	15.5		15.2		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	20.1		18.4		9	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.4	U	2.3	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.8	U	4.5	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	9.6	U	9.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	9.6	U	3.9	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	9.6	U	9.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.4	U	2.3	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.8	U	4.5	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.8	U	4.5	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.8	U	4.5	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.8	U	4.5	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	24	U	23	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	24	U	23	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.4	U	2.3	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.8	U	4.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.4	U	2.3	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.8	U	4.5	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.8	U	4.5	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.8	U	4.5	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.8	U	4.5	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.4	U	2.3	U	NC	

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Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	12	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	24	U	23	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	24	U	23	U	NC	
FC19279	LORNG_JMW6001_09262024	LORNG_JMW6001_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12.4	J	23		60	
				Perfluoropentanoic acid (PFPeA) (NG/L)	13.1		16.7		24	
				Perfluorohexanoic acid (PFHxA) (NG/L)	10.7		16		40	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	7.8		10.8		32	
				Perfluorooctanoic acid (PFOA) (NG/L)	9.8		14.6		39	
				Perfluorononanoic acid (PFNA) (NG/L)	2.7	J	3.4	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	0.63	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.7	J	2.6	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	J	4.5	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	47.2		57.3		19	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.2	J	2.5	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	70.8		85		18	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	17.7	J	19.4		9	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.8	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC19279	LORNG_JPZ0348_09262024	LORNG_JPZ0348_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6.3	J	8.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	17.3		21.9		23	
				Perfluorohexanoic acid (PFHxA) (NG/L)	23.9		30.3		24	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	8.9		11.3		24	
				Perfluorooctanoic acid (PFOA) (NG/L)	27.4		33.7		21	
				Perfluorononanoic acid (PFNA) (NG/L)	0.87	J	1.2	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.9		4.4		12	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	5		6.2		21	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	164		187		13	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.5	J	2.7	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	73.7		95.7		26	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	3	J	3.1	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.6	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.3	U	4.3	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	U	1.1	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.3	U	4.3	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.6	J	2.6	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.3	U	4.3	U	NC	
FC19279	LORNG_MMW0018B_09302024	LORNG_MMW0018B_09302024FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8.6	U	8.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8.6	U	8.7	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8.6	U	8.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.2	U	2.2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.3	U	4.3	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.3	U	4.3	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.3	U	4.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.3	U	4.3	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	22	U	22	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	22	U	22	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.2	U	2.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.3	U	4.3	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.3	U	4.3	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.3	U	4.3	U	NC	

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Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.3	U	4.3	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.3	U	4.3	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.2	U	2.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	11	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	22	U	22	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	22	U	22	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	8	J	6.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	20.4		16.5		21	
				Perfluorohexanoic acid (PFHxA) (NG/L)	28.4		22		25	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	10.9		8.7		22	
				Perfluorooctanoic acid (PFOA) (NG/L)	30.7		26		17	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.2	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	4.4		3.2	J	32	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	5.4		5.3		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	179		161		11	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.8	J	2.2	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	94.3		75.9		22	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.7	U	NC	
FC19279	LORNG_OW09001_09262024	LORNG_OW09001_09262024FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.7	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.7	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.7	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	4.7		3.5	J	29	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.7	U	NC	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	9.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
FC19279	LORNG_OW21005_09302024	LORNG_OW21005_09302024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	8.6	J	8.3	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	24.2		21.4		12	
				Perfluorohexanoic acid (PFHxA) (NG/L)	22.4		21.2		6	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	10.4		10		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	20		18.4		8	
				Perfluorononanoic acid (PFNA) (NG/L)	1.7	J	1.5	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.9		3.9		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	6.3		5.5		14	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	92.2		88.7		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	2.3	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	54.2		57.1		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	J	1.7	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC19279	LORNG_SB/OW16001_09252024	LORNG_SB/OW16001_09252024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12.6	J	11.6	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	4.8	J	4.7	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	5.3		5.2		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.4	J	2	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.8		6.1		11	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.2	J	1	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	12.6		11.2		12	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	14.4		13.8		4	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	

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Fall 2024 GW Program - SDG FC19279

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19304

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

Revised Report Released: February 06, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19304
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 09/25/2024
Number of Samples: 3
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_C1_ST_09252024BF	FC19304-1	groundwater	S2BVM
LORNG_C2_ST_09252024BF	FC19304-2	groundwater	S2BVM
LORNG_C3_ST_09252024BF	FC19304-3	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion related to the results reported by the validator.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The %R for NEtFOSA was outside of acceptance criteria for the low level CCV associated with samples LORNG_C3_ST_09252024BF and LORNG_C2_ST_09252024BF. The results reported for the impacted analyte in the associated samples have been qualified "UJ" on this basis.

The observed %Rs for PFDS, PFTrDA, and PFMPA were outside of acceptance criteria for the low level CCV associated with sample LORNG_C1_ST_09252024BF. The results reported for the impacted analytes in the associated sample have been qualified "UJ" on this basis.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

No sample was submitted as a field/equipment blank in association with samples in this sample delivery group (SDG).

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring qualification of sample results were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

No sample was submitted for MS/MSD evaluation in association with this SDG.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No samples were submitted as a field duplicate pair in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-analyzed as necessary due to quality control issues.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	NA		
Calibration Percent Relative Standard Deviation and Percent Difference			x
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification	x		
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	NA		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	**The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.**
J	**The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.**
J+	**The result is an estimated quantity, but the result may be biased high.**
J-	**The result is an estimated quantity, but the result may be biased low.**
UJ	**The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.**
R	**The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.**

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DLW

Date Validated: 01/08/2025

Reviewed: 1/16/25

Project: Loring AFB

SDG: FC19304

LAB: SGS Orlando

Samples Collected: 09/25/2024

3 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/3 at 2.2 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 09/25/2024
Extracted 10/22/2024
Analyzed 10/25/2024; 10/27/2024; 10/28/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_C1_ST_09252024BF	FC19304-1	
13C2-4:2FTS ↑ for run 2	reported from run1; no action	
13C3-HFPO-DA ↑ for run 1	HFPO-DA	reported from run 2; no action
	ADONA	reported from run 1 ND; no action
	9Cl-PF3ONS	reported from run 1 ND; no action
	11Cl-PF3OUdS	reported from run 1 ND; no action
LORNG_C2_ST_09252024BF	FC19304-2	
13C2-4:2FTS ↑ for run 1	reported from run 2; no action	
LORNG_C3_ST_09252024BF	FC19304-3	
13C2-4:2FTS ↑ for run 1	reported from run 2; no action	
13C3-HFPO-DA ↑ for run 1	HFPO-DA	reported from run 1 ND; no action
	ADONA	reported from run 1 ND; no action
	9Cl-PF3ONS	reported from run 1 ND; no action
	11Cl-PF3OUdS	reported from run 1 ND; no action

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5980-LLBS	ok
OP5980-BS	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
none

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
none

OP5980-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X

- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS9Q

10/25/24 all %RSD <20%

S9Q11-IBLK 9Q490.D 10/25/24 13:04 n/a Instrument Blank
4151-50-2 EtFOSA 0.0014 J ug/L ND; no action
S9Q11-ICV11 9Q491.D 10/25/24 13:18 n/a Initial cal verification 4
S9Q11-ICV11 9Q492.D 10/25/24 13:32 n/a Initial cal verification 20
S9Q11-CC11 9Q493.D 10/25/24 13:47 n/a Continuing cal 4
S9Q11-CC11 9Q494.D 10/25/24 14:01 n/a Continuing cal 1.0LL
EtFOSA out FLAG UJ

S9Q11-CC11 9Q501.D 10/25/24 15:41 n/a Continuing cal 4
S9Q11-ICCB 9Q502.D 10/25/24 15:55 n/a Continuing Calibration Blank

Samples 1-3 sample 1 from 10/27 run for NEtFOSA;
Flag samples 2 and 3 UJ
LORNG_C3_ST_09252024BF
LORNG_C2_ST_09252024BF

S9Q11-CC11 9Q513.D 10/25/24 18:32 n/a Continuing cal 4
S9Q11-ICCB 9Q514.D 10/25/24 18:46 n/a Continuing Calibration Blank

S9Q12-IBLK 9Q573.D 10/27/24 11:55 n/a Instrument Blank
4151-50-2 EtFOSA 0.0011 J ug/L ND; no action
S9Q12-CC11 9Q574.D 10/27/24 12:09 n/a Continuing cal 4
S9Q12-CC11 9Q575.D 10/27/24 12:23 n/a Continuing cal 1.0LL
PFDS, PFTrDA, PFMPA out flag UJ

Samples 1 and 3
SAMPLE 1 REPORTED: LORNG_C3_ST_09252024BF

S9Q12-CC11 9Q586.D 10/27/24 15:51 n/a Continuing cal 4

Instrument GCMS9Q

10/28/24 all %RSD <20%

S9Q13-IBLK 9Q666.D 10/28/24 15:53 n/a Instrument Blank
S9Q13-ICV13 9Q667.D 10/28/24 16:08 n/a Initial cal verification 4
S9Q13-ICV13 9Q668.D 10/28/24 16:22 n/a Initial cal verification 20
S9Q13-CC13 9Q669.D 10/28/24 16:36 n/a Continuing cal 4
S9Q13-CC13 9Q670.D 10/28/24 16:50 n/a Continuing cal 1.0LL

Sample 2

S9Q13-CC13 9Q681.D 10/28/24 19:27 n/a Continuing cal 4
S9Q13-ICCB 9Q682.D 10/28/24 19:42 n/a Continuing Calibration Blank

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

none

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19304					
			Location	C1		C2		C3	
			Sample Date	9/25/2024		9/25/2024		9/25/2024	
			Sample ID	LORNG_C1_ST_09252024BF		LORNG_C2_ST_09252024BF		LORNG_C3_ST_09252024BF	
			QC Code	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	9	J	11.5	J	32.5	
		Perfluoropentanoic acid (PFPeA)	NG/L	15.3		26.5		110	
		Perfluorohexanoic acid (PFHxA)	NG/L	12.3		17.9		113	
		Perfluoroheptanoic acid (PFHpA)	NG/L	7.9		10.9		48.8	
		Perfluorooctanoic acid (PFOA)	NG/L	8.9		13.2		113	
		Perfluorononanoic acid (PFNA)	NG/L	1.1	J	3.3	J	7.3	
		Perfluorodecanoic acid (PFDA)	NG/L	2.1	U	2	U	0.71	J
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.1	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.1	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.1	UJ	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.1	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.7	J	3.9	J	17.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.3	J	5.4		27.4	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	38.4		51.7		423	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.5	J	2.7	J	17.8	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	40.4		122		665	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.1	U	2	U	1.8	J
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.1	UJ	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.2	U	4.1	U	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.4	U	82	U	78	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.4	U	3.9	J	135	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.4	U	8.2	U	26.3	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.1	U	0.78	J	17.1	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.2	U	4.1	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.2	U	4.1	UJ	3.9	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.2	U	4.1	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.2	U	4.1	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	21	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	21	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.1	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.2	U	4.1	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1	UJ	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.2	U	4.1	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.2	U	4.1	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.2	U	4.1	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.2	U	4.1	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	11	U	10	U	9.7	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	21	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	21	U	20	U	19	U

Prepared by: AKN
Date: 1/21/25
Checked by:TC
Date:2/13/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19304	E1633DR	T	FC19304-1	LORNG_C1_ST_09252024BF	Perfluorotridecanoic acid (PFTrDA)	2.1	U	2.1	UJ	CVHL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2.1	U	2.1	UJ	CVHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.1	U	2.1	UJ	CVHL	NG/L
			FC19304-2	LORNG_C2_ST_09252024BF	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.1	U	4.1	UJ	CVHL	NG/L
			FC19304-3	LORNG_C3_ST_09252024BF	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	CVHL	NG/L

Prepared by:AKN
Date:1/21/25
Checked by:TC
Date:2/13/25

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19307

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

Revised Report Released: February 06, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19307
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 09/26/2024 – 09/27/2024, 10/01/2024 – 10/02/2024
Number of Samples: 24
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW02002_09272024	FC19307-1	groundwater	S2BVM
LORNG_BW18007_10012024	FC19307-2	groundwater	S2BVM
LORNG_EB004_10012024	FC19307-3	equipment blank	S2BVM
LORNG_EB006_10012024	FC19307-4	equipment blank	S2BVM
LORNG_LF2MW1_10012024	FC19307-5	groundwater	S2BVM
LORNG_OW08002_09262024FD	FC19307-6	groundwater	S2BVM
LORNG_BW02001_09272024	FC19307-7	groundwater	S2BVM
LORNG_EB005_10012024	FC19307-8	equipment blank	S2BVM
LORNG_JMW-0241A_10012024	FC19307-9	groundwater	S2BVM
LORNG_JMW-0806_10012024	FC19307-10	groundwater	S2BVM
LORNG_JPZ0349_09262024	FC19307-11	groundwater	S2BVM
LORNG_LF3MW3_10012024	FC19307-12	groundwater	S2BVM
LORNG_OW01004_09272024	FC19307-13	groundwater	S2BVM
LORNG_OW08002_09262024	FC19307-14	groundwater	S2BVM
LORNG_OW01005_09272024	FC19307-15	groundwater	S2BVM
LORNG_BW01009_10012024	FC19307-16	groundwater	S2BVM
LORNG_BW17005_10012024	FC19307-17	groundwater	S2BVM
LORNG_BW18006_10012024	FC19307-18	groundwater	S2BVM
LORNG_EB003_10012024	FC19307-19	equipment blank	S2BVM
LORNG_JBW7614_10012024	FC19307-20	groundwater	S2BVM
LORNG_JMW3501_10012024	FC19307-21	groundwater	S2BVM
LORNG_JPZ1382_10012024	FC19307-22	groundwater	S2BVM
LORNG_LF3MW3_10012024FD	FC19307-23	groundwater	S2BVM
LORNG_OW20001_10022024	FC19307-24	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers

along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion related to the results reported by the validator.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The observed (%R) for NEtFOSA was outside of acceptance criteria for the low level CCV associated with sample LORNG_JPZ1382_10012024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

The observed %Rs for PFDS, PFTrDA, and PFMPA were outside of acceptance criteria for the low level CCV associated with the samples listed in the table below. The results reported for the impacted analytes in the associated sample have been qualified "UJ" on this basis.

LORNG_OW20001_10022024	*LORNG_JMW3501_10012024*
LORNG_LF3MW3_10012024FD	*LORNG_JBW7614_10012024*

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB003_10012024 was submitted as an equipment blank in association with samples LORNG_JMW-0241A_10012024, LORNG_JBW7614_10012024, and LORNG_BW13001_10012024. No problems were found for this criterion.

Sample LORNG_EB004_10012024 was submitted as an equipment blank in association with samples LORNG_LF3MW3_10012024 and LORNG_LF3MW3_10012024FD. No problems were found for this criterion.

Sample LORNG_EB005_10012024 was submitted as an equipment blank in association with samples LORNG_JMW3501_10012024 and LORNG_BW18007_10012024. No problems were found for this criterion.

Sample LORNG_EB006_10012024 was submitted as an equipment blank in association with samples LORNG_JMW-0806_10012024 and LORNG_LF2MW1_10012024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring qualification of sample results were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratio was outside the established ratio limits for PFHxA during the analysis of sample LORNG_JBW7614_10012024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratio was outside the established ratio limits for PFNA during the analysis of sample LORNG_OW01004_09272024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratio was outside the established ratio limits for PFNS during the analysis of sample LORNG_BW01009_10012024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_JMW3501_10012024 was submitted for MS evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_BW02002_09272024 was submitted for MS evaluation in association with this SDG. Upon evaluation all accuracy indicators were acceptable.

Sample LORNG_JPZ1382_10012024 was submitted for laboratory duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated.

Sample LORNG_BW18007_10012024 was submitted for laboratory duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_LF3MW3_10012024 and LORNG_LF3MW3_10012024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_OW08002_09262024 and LORNG_OW08002_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or analyzed at dilutions as necessary to confirm quality control results or due to high analyte concentrations.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_JPZ0349_09262024 was submitted for split sample analyses. The sample was also analyzed by Bureau Veritas. The split sample results are located in SDG C4V7274. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check			x
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DLW

Date Validated: 01/09/2025

Reviewed: 1/16/25

Project: Loring AFB

SDG: FC19307

LAB: SGS Orlando

Samples Collected: 09/26/2024 – 09/27/2024, 10/01/2024 – 10/02/2024

24 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/3 at 2.6,2.8,3.0 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 09/26/2024 – 09/27/2024, 10/01/2024 – 10/02/2024
Extracted 10/22/2024
Analyzed 10/25/2024; 10/27/2024; 11/07/2024; 11/08/2024; 11/10/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_OW01005_09272024 FC19307-15

13C2-4:2FTS run 1 ↑ associated analyte reported from run 2; no action

LORNG_JMW3501_10012024 FC19307-21

13C2-4:2FTS run 2↑ associated analyte reported from run 1; no action

13C3-HFPO-DA run1 ↑ HFPO-DA reported from run 2; no action

ADONA ND; no action

9Cl-PF3ONS ND; no action

11Cl-PF3OUdS ND; no action

LORNG_JPZ1382_10012024 FC19307-22

13C3-HFPO-DA ↑ HFPO-DA ND; no action

ADONA ND; no action

9Cl-PF3ONS ND; no action

11Cl-PF3OUdS ND; no action

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5980-LLBS	ok
OP5979-LLBS	ok
OP5980-BS	ok
OP5979-BS	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

FC19307-21	**LORNG_JMW3501_10012024**	**MS only all ok except 3:3-FTCA MS ↑ ND; no action**
FC19307-1	**LORNG_BW02002_09272024**	**MS only ok**

Matrix Duplicate:

FC19307-22 LORNG_JPZ1382_10012024 ok
FC19307-2 LORNG_BW18007_10012024 ok

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB003_10012024 associated with samples LORNG_JMW-0241A_10012024
LORNG_JBW7614_10012024

LORNG_BW13001_10012024

All ND

LORNG_EB004_10012024 associated with samples LORNG_LF3MW3_10012024
LORNG_LF3MW3_10012024FD

All ND

LORNG_EB005_10012024 associated with samples LORNG_JMW3501_10012024
LORNG_BW18007_10012024

All ND

LORNG_EB006_10012024 associated with samples LORNG_JMW-0806_10012024
LORNG_LF2MW1_10012024

All ND

OP5980-MB all ND
OP5979-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS9Q

10/25/24 all %RSD <20%

S9Q11-IBLK 9Q490.D 10/25/24 13:04 n/a Instrument Blank
4151-50-2 EtFOSA 0.0014 J ug/L ND; no action
S9Q11-ICV11 9Q491.D 10/25/24 13:18 n/a Initial cal verification 4
S9Q11-ICV11 9Q492.D 10/25/24 13:32 n/a Initial cal verification 20
S9Q11-CC11 9Q493.D 10/25/24 13:47 n/a Continuing cal 4
S9Q11-CC11 9Q494.D 10/25/24 14:01 n/a Continuing cal 1.0LL
EtFOSA 40.3% FLAG UJ in sample LORNG_JPZ1382_10012024

S9Q11-CC11 9Q501.D 10/25/24 15:41 n/a Continuing cal 4
S9Q11-ICCB 9Q502.D 10/25/24 15:55 n/a Continuing Calibration Blank

Sample 21 only Gen X reported

S9Q11-CC11 9Q513.D 10/25/24 18:32 n/a Continuing cal 4
S9Q11-ICCB 9Q514.D 10/25/24 18:46 n/a Continuing Calibration Blank

Sample 22 LORNG_JPZ1382_10012024

S9Q11-CC11 9Q525.D 10/25/24 21:23 n/a Continuing cal 4

S9Q12-IBLK 9Q573.D 10/27/24 11:55 n/a Instrument Blank
4151-50-2 EtFOSA 0.0011 J ug/L ND; no action
S9Q12-CC11 9Q574.D 10/27/24 12:09 n/a Continuing cal 4
S9Q12-CC11 9Q575.D 10/27/24 12:23 n/a Continuing cal 1.0LL
PFDS 32.2%
PFTrDA 31.2%D
PFMPA 30.2%

Samples 20,21,23,24
LORNG_OW20001_10022024
LORNG_LF3MW3_10012024FD
LORNG_JMW3501_10012024
LORNG_JBW7614_10012024

S9Q12-CC11 9Q586.D 10/27/24 15:51 n/a Continuing cal 4

Instrument GCMS9Q

11/06/24 all %RSD <20%

S9Q20-IBLK 9Q1143.D 11/06/24 20:02 n/a Instrument Blank
4151-50-2 EtFOSA 0.0013 J ug/L ND; no action
S9Q20-ICV20 9Q1144.D 11/06/24 20:16 n/a Initial cal verification 4
S9Q20-ICV20 9Q1145.D 11/06/24 20:31 n/a Initial cal verification 20
S9Q20-CC20 9Q1146.D 11/06/24 20:45 n/a Continuing cal 4
S9Q20-CC20 9Q1147.D 11/06/24 20:59 n/a Continuing cal 1.0LL

S9Q21-CC20 9Q1224.D 11/07/24 15:36 n/a Continuing cal 1.0LL

S9Q21-CC20 9Q1241.D 11/07/24 19:53 n/a Continuing cal 4
S9Q21-ICCB 9Q1242.D 11/07/24 20:07 n/a Continuing Calibration Blank

Samples 1,2,3,4,5

S9Q21-CC20 9Q1253.D 11/07/24 22:44 n/a Continuing cal 4
S9Q21-ICCB 9Q1254.D 11/07/24 22:59 n/a Continuing Calibration Blank

Samples 6,7,8,9,10,11,12,13,15

S9Q21-CC20 9Q1265.D 11/08/24 01:35 n/a Continuing cal 4
S9Q21-ICCB 9Q1266.D 11/08/24 01:50 n/a Continuing Calibration Blank

Samples 16,17,18,19

S9Q21-ECC20 9Q1271.D 11/08/24 03:01 n/a Ending cal 4
S9Q21-ICCB 9Q1272.D 11/08/24 03:15 n/a Continuing Calibration Blank

Instrument GCMS9Q

11/10/24 all %RSD <20%

S9Q22-IBLK 9Q1288.D 11/10/24 16:59 n/a Instrument Blank
4151-50-2 EtFOSA 0.0013 J ug/L ND; no action
S9Q22-ICV22 9Q1289.D 11/10/24 17:14 n/a Initial cal verification 4
S9Q22-ICV22 9Q1290.D 11/10/24 17:28 n/a Initial cal verification 20
S9Q22-CC22 9Q1291.D 11/10/24 17:42 n/a Continuing cal 4
S9Q22-CC22 9Q1292.D 11/10/24 17:57 n/a Continuing cal 1.0LL

S9Q22-CC22 9Q1303.D 11/10/24 20:33 n/a Continuing cal 4
S9Q22-ICCB 9Q1304.D 11/10/24 20:48 n/a Continuing Calibration Blank

Samples 13,14,15

S9Q22-CC22 9Q1315.D 11/10/24 23:25 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_JBW7614_10012024	FC19307-20	PFHxA	FLAG J
LORNG_OW01004_09272024	FC19307-13	PFNA	FLAG J
LORNG_BW01009_10012024	FC19307-16	PFNS	FLAG J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_LF3MW3_10012024 and LORNG_LF3MW3_10012024FD all ok

LORNG_OW08002_09262024 and LORNG_OW08002_09262024FD all ok

SEE FIELD DUPLICATE WORKSHEET - Table 4

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19307													
		Location		JMW-0241A	JMW-0806	JMW3501	JPZ0349	JPZ1382	LF2MW1	LF3MW3		OW01004	OW10005	OW08002	
		Sample Date		10/1/2024	10/1/2024	10/1/2024	9/26/2024	10/1/2024	10/1/2024	10/1/2024		9/27/2024	9/27/2024	9/26/2024	
		Sample ID		LORNG_JMW-0241A_10012024	LORNG_JMW-0806_10012024	LORNG_JMW3501_10012024	LORNG_JPZ0349_09262024	LORNG_JPZ1382_10012024	LORNG_LF2MW1_10012024	LORNG_LF3MW3_10012024	LORNG_LF3MW3_10012024FD	LORNG_OW01004_09272024	LORNG_OW10005_09272024	LORNG_OW08002_09262024	LORNG_OW08002_09262024FD
		QC Code		N	N	N	N	N	N	N	FD	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.2 U	2.2 J	2.9 J	3.5 J	4.1 U	3.9 U	4 U	3.9 U	33.7	9.9 J	21.1	18.8
		Perfluoropentanoic acid (PFPeA)	NG/L	2.1 U	1.1 J	1.5 J	4.6 J	2 U	0.97 J	2 U	1.9 U	101	13.3	62.4	58.3
		Perfluorohexanoic acid (PFHxA)	NG/L	0.61 J	1.9 J	0.84 J	4.7	2 U	1.4 J	2 U	1.9 U	162	10.3	69	66.3
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.1 U	0.57 J	1.9 U	2.5 J	2 U	0.84 J	2 U	0.59 J	77.2	7.3	26.6	25.7
		Perfluorooctanoic acid (PFOA)	NG/L	1 U	1.7 J	1.2 J	4.5	0.78 J	2.9 J	1 U	1.1 J	132	7.1	75.8	72.9
		Perfluorononanoic acid (PFNA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 J	1.1 J	3.1 J	3 J
		Perfluorodecanoic acid (PFDA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	0.61 J	0.76 J	2 U	2 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.1 U	2 U	1.9 UJ	2 U	2 U	1.9 U	2 U	1.9 UJ	2 U	2 U	2 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.1 U	2 U	1.9 U	1.1 J	2 U	0.61 J	2 U	1.9 U	21.5	3 J	11.5	10.3
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.2 U	4.1 U	3.9 U	1.3 J	4.1 U	3.9 U	4 U	3.9 U	32.1	2.8 J	15.9	14.7
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.83 J	7.1	5.6	21.8	1.9 J	6.8	2 U	1.9 U	738	22.9	283	254
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	18.3	0.91 J	7.9	7.8
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.93 J	5.8	2.3 J	11.1	1.3 J	10.5	2 U	3.2 J	846	34.1	222	191
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.8 J	2 U	0.64 J	2 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.1 U	2 U	1.9 UJ	2 U	2 U	1.9 U	2 U	1.9 UJ	2 U	2 U	2 U	2 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.3 U	8.2 U	7.8 U	8.2 U	8.2 U	7.8 U	8 U	7.8 U	8.1 U	81 U	8 U	8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.3 U	8.2 U	7.8 U	8.2 U	8.2 U	7.8 U	8 U	7.8 U	64.3	8.1 U	10.7 J	10.9 J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.3 U	8.2 U	7.8 U	8.2 U	8.2 U	7.8 U	8 U	7.8 U	53.8	8.1 U	8 U	8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	17.3	2 U	8.5	8.7
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 UJ	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	21 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	20 U	20 U	20 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	21 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	20 U	20 U	20 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1 U	2 U	1.9 UJ	2 U	2 U	1.9 U	2 U	1.9 UJ	2 U	2 U	2 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.2 U	4.1 U	3.9 U	4.1 U	4.1 U	3.9 U	4 U	3.9 U	4 U	4 U	4 U	4 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1 U	2 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10 U	10 U	9.7 U	10 U	10 U	9.7 U	10 U	9.7 U	10 U	10 U	10 U	10 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	21 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	20 U	20 U	20 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	21 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U	20 U	20 U	20 U	20 U

Prepared by: AKN
Date: 1/21/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19307	
			Location	OW20001	
			Sample Date	10/2/2024	
			Sample ID	LORNG_OW20001_10022024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.4	J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.7	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.4	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.2	J
		Perfluorononanoic acid (PFNA)	NG/L	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.81	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	12.7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	7.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U

Prepared by: AKN
Date: 1/21/25
Checked by:
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier
FC19307	E1633DR	T	FC19307-16	LORNG_BW01009_10012024	Perfluorononanesulfonic acid (PFNS)	1	J
			FC19307-20	LORNG_JBW7614_10012024	Perfluorohexanoic acid (PFHxA)	0.86	J
					Perfluorotridecanoic acid (PFTrDA)	1.9	U
					Perfluorodecanesulfonic acid (PFDS)	1.9	U
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U
			FC19307-21	LORNG_JMW3501_10012024	Perfluorotridecanoic acid (PFTrDA)	1.9	U
					Perfluorodecanesulfonic acid (PFDS)	1.9	U
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U
			FC19307-22	LORNG_JPZ1382_10012024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.1	U
			FC19307-23	LORNG_LF3MW3_10012024FD	Perfluorotridecanoic acid (PFTrDA)	1.9	U
					Perfluorodecanesulfonic acid (PFDS)	1.9	U
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U
			FC19307-13	LORNG_OW01004_09272024	Perfluorononanoic acid (PFNA)	2	J
			FC19307-24	LORNG_OW20001_10022024	Perfluorotridecanoic acid (PFTrDA)	2	U
					Perfluorodecanesulfonic acid (PFDS)	2	U
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U

Prepared by:AKN
Date:1/21/25
Checked by:
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

Validated Result	Validation Qualifier	Val Reason Code	Result Units
1	J	IAG	NG/L
0.86	J	IAG	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
4.1	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
1.9	UJ	CVHL	NG/L
2	J	IAG	NG/L
2	UJ	CVHL	NG/L
2	UJ	CVHL	NG/L
2	UJ	CVHL	NG/L

Prepared by:AKN
Date:1/21/25
Checked by:
Date:

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19307

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19307	LORNG_LF3MW3_10012024	LORNG_LF3MW3_10012024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4	U	3.9	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2	U	0.59	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1	U	1.1	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	0.61	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4	U	3.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2	U	3.2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	9.7	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	19	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19307

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	19	U	NC	
FC19307	LORNG_OW08002_09262024	LORNG_OW08002_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	21.1		18.8		12	
				Perfluoropentanoic acid (PFPeA) (NG/L)	62.4		58.3		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	69		66.3		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	26.6		25.7		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	75.8		72.9		4	
				Perfluorononanoic acid (PFNA) (NG/L)	3.1	J	3	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	11.5		10.3		11	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	15.9		14.7		8	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	283		254		11	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	7.9		7.8		1	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	222		191		15	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.64	J	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	10.7	J	10.9	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	8.5		8.7		2	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	10	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19307

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19340

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

Revised Report Released: February 06, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19340
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/01/2024 – 10/02/2024
Number of Samples: 18
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_EB009_10022024	FC19340-1	equipment blank	S2BVM
LORNG_JBW7738B_10022024	FC19340-2	groundwater	S2BVM
LORNG_JBW7338A_10022024	FC19340-3	groundwater	S2BVM
LORNG_JMW1684_10022024	FC19340-4	groundwater	S2BVM
LORNG_JMW1684_10022024FD	FC19340-5	groundwater	S2BVM
LORNG_MMW0015_10022024	FC19340-6	groundwater	S2BVM
LORNG_OW20003_10022024	FC19340-7	groundwater	S2BVM
LORNG_UNK-042_10022024	FC19340-8	groundwater	S2BVM
LORNG_USMW021_10022024	FC19340-9	groundwater	S2BVM
LORNG_BB_BW001_10022024	FC19340-10	groundwater	S2BVM
LORNG_BB_OW001_10022024	FC19340-11	groundwater	S2BVM
LORNG_BW13001_10012024	FC19340-12	groundwater	S2BVM
LORNG_EB007_10022024	FC19340-13	equipment blank	S2BVM
LORNG_EB008_10022024	FC19340-14	equipment blank	S2BVM
LORNG_JBW7348_10022024	FC19340-15	groundwater	S2BVM
LORNG_JBW7348_10022024FD	FC19340-16	groundwater	S2BVM
LORNG_JMW7322_10022024	FC19340-17	groundwater	S2BVM
LORNG_MMW0002_10022024	FC19340-18	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the

compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion related to the results reported by the validator.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB007_10022024 was submitted as an equipment blank in association with sample LORNG_OW20001_10022024. No problems were found for this criterion.

Sample LORNG_EB008_10022024 was submitted as an equipment blank in association with sample LORNG_MMW0015_10022024. No problems were found for this criterion.

Sample LORNG_EB009_10022024 was submitted as an equipment blank in association with samples listed in the table below. No problems were found for this criterion.

LORNG_MMW0002_10022024	*LORNG_JMW1684_10022024*
LORNG_JBW7348_10022024	*LORNG_JMW1684_10022024FD*
LORNG_JBW7348_10022024FD	

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exception.

The transition mass ratio was outside the established ratio limits for PFBA during the analysis of sample LORNG_BW13001_10012024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_MMW0015_10022024 was submitted for MS evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_OW20003_10022024 was submitted for laboratory duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_JBW7348_10022024 and LORNG_JBW7348_10022024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_JMW1684_10022024 and LORNG_JMW1684_10022024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

No re-extraction, reanalyses or dilutions were provided for data review.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DLW

Date Validated: 01/13/2025

Reviewed: 1/16/25

Project: Loring AFB

SDG: FC19340

LAB: SGS Orlando

Samples Collected: 10/01/2024 – 10/02/2024

18 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/4 at 2.6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/01/2024 – 10/02/2024
Extracted 10/23/2024
Analyzed ; 11/08/2024; 11/09/2024; 11/11/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5999-LLBS ok

OP5999-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
FC19340-6 LORNG_MMW0015_10022024 MS only all ok

Matrix Duplicate:
FC19340-7 LORNG_OW20003_10022024 ok

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB007_10022024 associated with LORNG_OW20001_10022024
All ND

LORNG_EB008_10022024 associated with LORNG_MMW0015_10022024
All ND

LORNG_EB009_10022024 associated with LORNG_MMW0002_10022024
LORNG_JBW7348_10022024
LORNG_JBW7348_10022024FD
LORNG_JMW1684_10022024
LORNG_JMW1684_10022024FD

All ND

OP5999-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X

- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS8Q

11/06/24 all %RSD <20%

S8Q196-IBLK 8Q14139.D 11/06/24 14:18 n/a Instrument Blank
4151-50-2 EtFOSA 0.0016 J ug/L ND; no action
S8Q196-ICV196 8Q14140.D 11/06/24 14:32 n/a Initial cal verification 4
S8Q196-ICV196 8Q14141.D 11/06/24 14:50 n/a Initial cal verification 4
S8Q196-CC196 8Q14142.D 11/06/24 15:04 n/a Continuing cal 4
S8Q196-CC196 8Q14143.D 11/06/24 15:18 n/a Continuing cal 1.0LL

S8Q198-IBLK 8Q14266.D 11/08/24 12:56 n/a Instrument Blank
4151-50-2 EtFOSA 0.0017 J ug/L ND; no action
S8Q198-CC196 8Q14268.D 11/08/24 13:24 n/a Continuing cal 1.0LL

S8Q198-CC196 8Q14289.D 11/08/24 18:14 n/a Continuing cal 4
S8Q198-ICCB 8Q14290.D 11/08/24 18:27 n/a Continuing Calibration Blank

Samples 1-6

S8Q198-CC196 8Q14301.D 11/08/24 20:59 n/a Continuing cal 4
S8Q198-ICCB 8Q14302.D 11/08/24 21:13 n/a Continuing Calibration Blank

Samples 7,8,10-15

S8Q198-CC196 8Q14313.D 11/08/24 23:44 n/a Continuing cal 4
S8Q198-ICCB 8Q14314.D 11/08/24 23:58 n/a Continuing Calibration Blank

Samples 16,18

S8Q198-CC196 8Q14318.D 11/09/24 00:53 n/a Continuing cal 4

Instrument GCMS8Q

11/11/24 all %RSD <20%

S8Q199-IBLK 8Q14372.D 11/11/24 18:19 n/a Instrument Blank
4151-50-2 EtFOSA 0.0016 J ug/L ND; no action
S8Q199-ICV199 8Q14373.D 11/11/24 18:33 n/a Initial cal verification 4
S8Q199-ICV199 8Q14374.D 11/11/24 18:47 n/a Initial cal verification 20
S8Q199-CC199 8Q14375.D 11/11/24 19:01 n/a Continuing cal 4
S8Q199-CC199 8Q14376.D 11/11/24 19:14 n/a Continuing cal 1.0LL

Samples 9 and 17

S8Q199-CC199 8Q14384.D 11/11/24 21:05 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

FC19340-12 LORNG_BW13001_10012024 PFBA
Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_JBW7348_10022024 and LORNG_JBW7348_10022024FD all ok

LORNG_JMW1684_10022024 and LORNG_JMW1684_10022024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

				SDG	FC19340													
				Location	BB_BW001	BB_OW001	BW13001	FIELDQC			JBW7338A	JBW7348		JBW7738B	JMW1684	
				Sample Date	10/2/2024	10/2/2024	10/1/2024	10/2/2024			10/2/2024	10/2/2024		10/2/2024	10/2/2024	
				Sample ID	LORNG_BB_BW001_10022024	LORNG_BB_OW001_10022024	LORNG_BW13001_10012024	LORNG_EB007_10022024	LORNG_EB008_10022024	LORNG_EB009_10022024	LORNG_JBW7338A_10022024	LORNG_JBW7348_10022024	LORNG_JBW7348_10022024FD	LORNG_JBW7738B_10022024	LORNG_JMW1684_10022024	LORNG_JMW1684_10022024FD
				QC Code	N	N	N	EB	EB	EB	N	N	FD	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.2 J	4.6 J	26.1 J	3.7 U	3.6 U	3.7 U	6.5 J	3.2 J	2.9 J	7.6 J	5.4 J	4.9 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	3.3 J	9.2	1.4 J	1.9 U	1.8 U	1.9 U	15.2	3.4 J	3.3 J	17	7.2 J	9.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	5.1	14.6	2.4 J	1.9 U	1.8 U	1.9 U	21.7	4.3	3.8	26.1	6.8	7.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.5 J	5.5	1.5 J	1.9 U	1.8 U	1.9 U	5.2	2.7 J	2.9 J	6.9	4.3	4.3	
		Perfluorooctanoic acid (PFOA)	NG/L	5.7	19.9	1.4 J	0.93 U	0.91 U	0.93 U	7.8	3.4 J	3.5 J	9	4.5	4.7	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	0.81 J	1.9 U	1.9 U	1.8 U	1.9 U	2 U	0.58 J	1.9 U	2 U	0.58 J	0.62 J	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.6 J	4.6	0.62 J	1.9 U	1.8 U	1.9 U	10.2	1.6 J	1.3 J	12.2	2.5 J	2.6 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.5 J	5.3	3.7 U	3.7 U	3.6 U	3.7 U	11.4	1.8 J	1.8 J	13.2	3.3 J	3.5 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	18.7	93.8	8	1.9 U	1.8 U	1.9 U	65.2	14.8	14.5	79.9	25.8	26.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.8 J	1.9 U	1.9 U	1.8 U	1.9 U	3.7 J	1.9 U	1.9 U	5	0.9 J	0.78 J	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	4.9	53.5	7.6	1.9 U	1.8 U	1.9 U	112	18	18.9	138	32.7	33.2	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.1 U	7.4 U	7.4 U	7.4 U	7.3 U	7.4 U	8 U	7.4 U	7.4 U	8 U	7.5 U	7.5 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.1 U	7.4 U	7.4 U	7.4 U	7.3 U	7.4 U	8 U	7.4 U	7.4 U	8 U	7.5 U	7.5 U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.1 U	7.4 U	7.4 U	7.4 U	7.3 U	7.4 U	8 U	7.4 U	7.4 U	8 U	7.5 U	7.5 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 U	19 U	19 U	19 U	18 U	19 U	20 U	19 U	19 U	20 U	19 U	19 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 U	19 U	19 U	19 U	18 U	19 U	20 U	19 U	19 U	20 U	19 U	19 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	4 U	3.7 U	3.7 U	4 U	3.8 U	3.8 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.9 U	9.3 U	9.3 U	9.3 U	9.1 U	9.3 U	10 U	9.3 U	9.3 U	10 U	9.4 U	9.4 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	19 U	19 U	19 U	18 U	19 U	20 U	19 U	19 U	20 U	19 U	19 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U	19 U	19 U	19 U	18 U	19 U	20 U	19 U	19 U	20 U	19 U	19 U	

Prepared by: AKN
Date: 1/21/25
Checked by:TC for EDS Validation Company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19340									
			Location	JMW7322		MMW0002		MMW0015		OW20003		UNK-042		USMW210	
			Sample Date	10/2/2024		10/2/2024		10/2/2024		10/2/2024		10/2/2024		10/2/2024	
			Sample ID	LORNG_JMW7322_10022024		LORNG_MMW0002_10022024		LORNG_MMW0015_10022024		LORNG_OW20003_10022024		LORNG_UNK-042_10022024		LORNG_USMW210_10022024	
			QC Code	N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.3	J	3.8	U	3.6	U	7.9	J	8.7	J	9.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	9.2		1.9	U	1.8	U	12.2		24.3		21.7	
		Perfluorohexanoic acid (PFHxA)	NG/L	14.9		0.57	J	1.8	U	17.1		21.5		36.3	
		Perfluoroheptanoic acid (PFHpA)	NG/L	5.4		0.68	J	1.8	U	4.7		9.6		12.4	
		Perfluorooctanoic acid (PFOA)	NG/L	19.7		2	J	0.91	U	5.9		16.2		47.6	
		Perfluorononanoic acid (PFNA)	NG/L	0.65	J	1.9	U	1.8	U	1.9	U	1	J	4	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	4.1		1.9	U	1.8	U	2.9	J	4.6		8.2	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	5		3.8	U	3.6	U	4.2	J	6.2		10.3	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	93.4		1.9	U	1.8	U	43.5		72.1		212	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	J	1.9	U	1.8	U	2.5	J	1.9	J	4.9	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	46.9		1.1	J	0.89	J	58.8		56.8		234	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.7	U	7.3	U	7.4	U	7.4	U	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.7	U	7.3	U	7.4	U	7.4	U	6.4	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.7	U	7.3	U	7.4	U	7.4	U	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	19	U	18	U	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	19	U	18	U	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.6	U	9.1	U	9.3	U	9.3	U	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	19	U	18	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	19	U	18	U	19	U	19	U	19	U

Prepared by: AKN
Date: 1/21/25
Checked by:TC for EDS Validation Company
Date:2/14/25

Table 3 – Summary of Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19340	E1633DR	T	FC19340-12	LORNG_BW13001_10012024	Perfluorobutanoic acid (PFBA)	26.1	=	26.1	J	IAG	NG/L

Prepared by: AKN
Date: 1/21/25
Checked by:TC for EDS Validation Company
Date:2/24/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19340

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19340	LORNG_JBW7348_10022024	LORNG_JBW7348_10022024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.2	J	2.9	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.4	J	3.3	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.3		3.8		12	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.7	J	2.9	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.4	J	3.5	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.58	J	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.6	J	1.3	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.8	J	1.8	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	14.8		14.5		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	18		18.9		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	

Prepared by: AKN 12/3/24
Checked by: TC for EDS Validation company 2/14/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19340

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC19340	LORNG_JMW1684_10022024	LORNG_JMW1684_10022024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.4	J	4.9	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.2	J	9.6		29	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.8		7.5		10	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.3		4.3		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.5		4.7		4	
				Perfluorononanoic acid (PFNA) (NG/L)	0.58	J	0.62	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.5	J	2.6	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.3	J	3.5	J	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	25.8		26.1		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.9	J	0.78	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	32.7		33.2		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.4	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 GW Program - SDG FC19340

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

Prepared by: AKN 12/3/24
Checked by: TC for EDS Validation company 2/14/25

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19376

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19376
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/03/2024 – 10/04/2024
Number of Samples: 22
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW01007_10042024	FC19376-1	groundwater	S2BVM
LORNG_BW07001_10042024	FC19376-2	groundwater	S2BVM
LORNG_BW20001_10032024	FC19376-3	groundwater	S2BVM
LORNG_EB010_10032024	FC19376-4	equipment blank	S2BVM
LORNG_EB012_10032024	FC19376-5	equipment blank	S2BVM
LORNG_LF2MW2_10032024	FC19376-6	groundwater	S2BVM
LORNG_OW20004_10032024	FC19376-7	groundwater	S2BVM
LORNG_OW20004_10032024FD	FC19376-8	groundwater	S2BVM
LORNG_OW20005_10032024	FC19376-9	groundwater	S2BVM
LORNG_BW07002_10042024	FC19376-10	groundwater	S2BVM
LORNG_BW12006_10042024	FC19376-11	groundwater	S2BVM
LORNG_JMW0991_10032024	FC19376-12	groundwater	S2BVM
LORNG_RFW1144_10032024	FC19376-13	groundwater	S2BVM
LORNG_RFW1147_10042024	FC19376-14	groundwater	S2BVM
LORNG_SB/OW17001_10032024	FC19376-15	groundwater	S2BVM
LORNG_USGS2_40_10032024	FC19376-16	groundwater	S2BVM
LORNG_EB011_10032024	FC19376-17	equipment blank	S2BVM
LORNG_JMW1665_10032024	FC19376-18	groundwater	S2BVM
LORNG_JPZ7704_10032024	FC19376-19	groundwater	S2BVM
LORNG_LF3MW4_10032024	FC19376-20	groundwater	S2BVM
LORNG_OW17002_10032024	FC19376-21	groundwater	S2BVM
LORNG_USGS2_125_10032024	FC19376-22	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion with the following exceptions.

The observed %R for NEtFOSAA was outside of acceptance criteria for the ICV associated with sample LORNG_RFW1144_10032024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The observed %R for PFDA was outside of acceptance criteria for the low level CCV associated with sample LORNG_RFW1144_10032024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB010_10032024 was submitted as an equipment blank in association with sample LORNG_LF2MW2_10032024. No problems were found for this criterion.

Sample LORNG_EB012_10032024 was submitted as an equipment blank in association with samples LORNG_JMW0991_10032024 and LORNG_LF3MW4_10032024. No problems were found for this criterion.

Sample LORNG_EB011_10032024 was submitted as an equipment blank in association with sample LORNG_JMW1665_10032024. No problems were found for this criterion with the following exceptions. PFOA and PFOS were positively identified. Positive sample results reported for the impacted analytes in the associated samples have been evaluated and qualified as appropriate per validation guidance.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exception.

The transition mass ratio was outside the established ratio limits for PFOA during the analysis of sample LORNG_EB011_10032024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratio was outside the established ratio limits for PFNS during the analysis of sample LORNG_RFW1147_10042024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_BW07001_10042024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_JMW0991_10032024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results with the following exceptions. Poor MS/MSD precision was noted for PFOS. The positive result reported for the PFOS in the parent sample has been qualified "J" on this basis. The observed MS recoveries were extremely low (0%) for the analytes listed in the table below while the MSD recoveries were acceptable. Based on professional judgment the results reported for the impacted analytes in the parent sample have been qualified "UJ" on this basis.

PFTrDA	*PFTeDA*	*PFDS*	*PFDoS*	*11Cl-PF3OUdS*

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_OW20004_10032024 and LORNG_OW20004_10032024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analyte concentration into the instrument's linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks			x
Calibration Percent Relative Standard Deviation and Percent Difference			x
Instrument Sensitivity Check			x
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate			x
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
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Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
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Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_OW20004_10032024	LORNG_OW20004_10032024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	1.9	1.8	5.4		
PFBSA	0.8	0.76	5.1		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA			0.0		
PFHPSA			0.0		
PFHXA			0.0		
PFHXSA	8.7	7.6	13.5		
PFMBA			0.0		
PFMPA			0.0		
PFNA			0.0		
PFNSA			0.0		
PFOA			0.0		
PFOS	10.8	9.1	17.1		
PFPA			0.0		
PFPESA	1	0	0.0	4.7	
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/29/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19376

LAB: SGS Orlando

Samples Collected: 10/03/2024 – 10/04/2024

22 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/5 at <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/03/2024 – 10/04/2024
Extracted 10/24/2024
Analyzed 11/13/2024; 11/14/2024; 11/15/2024; 11/17/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6035-LLBS ok
OP6036-LLBS ok

OP6035-BS ok
OP6036-BS ok

Lab noted incorrectly in Case narrative and result footnote that LL LCS was out for PFDA for sample -13. Sample 13 is associated with OP6035-LLBS and there were no %Rs outside of acceptance criteria. The ISC associated with this sample is out for PFDA

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_BW07001_10042024		**FC19376-2**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**flag**
All ok				

LORNG_JMW0991_10032024		**FC19376-12**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**flag**
PFTrDA	**0%**	**ok**	**out**	**UJ**
PFTeDA	**0%**	**ok**	**out**	**UJ**
PFHpS	**↑**	**ok**	**out**	**ND; NO ACTION**
PFOS	**↑**	**ok**	**out**	**J**
PFNS	**↓**	**ok**	**out**	**inconclusive; no action**
PFDS	**0%**	**ok**	**out**	**UJ**
PFDoS	**0%**	**ok**	**out**	**UJ**
9Cl-PF3ONS	**↓**	**ok**	**out**	**inconclusive; no action**
11Cl-PF3OUdS	**0%**	**ok**	**out**	**UJ**

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less)

samples of similar matrix or concentration or each extraction batch.

- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB010_10032024
associated with LORNG_LF2MW2_10032024
All ND

LORNG_EB012_10032024
associated with
LORNG_JMW0991_10032024
LORNG_LF3MW4_10032024
All ND

LORNG_EB011_10032024
associated with LORNG_JMW1665_10032024
PFOA 2.4 J ng/L result >RL but <5X blank flag J+
PFOS 0.62 J ng/L results >RL and >5X; no action

OP6035-MB all ND
OP6036-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS7Q

11/10/24 all %RSD <20%

S7Q189-IBLK 7Q13390.D 11/10/24 17:32 n/a Instrument Blank
S7Q189-ICV189 7Q13391.D 11/10/24 17:46 n/a Initial cal verification 4
S7Q189-ICV189 7Q13392.D 11/10/24 18:00 n/a Initial cal verification 20

S7Q192-IBLK 7Q13582.D 11/13/24 13:01 n/a Instrument Blank
S7Q192-CC189 7Q13584.D 11/13/24 13:29 n/a Continuing cal 1.0LL

S7Q192-CC189 7Q13613.D 11/13/24 20:18 n/a Continuing cal 4
S7Q192-ICCB 7Q13614.D 11/13/24 20:32 n/a Continuing Calibration Blank

Samples 1-5

S7Q192-CC189 7Q13625.D 11/13/24 23:06 n/a Continuing cal 4
S7Q192-ICCB 7Q13626.D 11/13/24 23:20 n/a Continuing Calibration Blank

Samples 6-11,14-16

S7Q192-CC189 7Q13637.D 11/14/24 01:54 n/a Continuing cal 4
S7Q192-ICCB 7Q13638.D 11/14/24 02:08 n/a Continuing Calibration Blank

Samples 17-20

S7Q192-ECC189 7Q13644.D 11/14/24 03:32 n/a Ending cal 4
S7Q192-ICCB 7Q13645.D 11/14/24 03:46 n/a Continuing Calibration Blank

Instrument GCMS7Q

11/14/24 all %RSD <20%

S7Q193-IBLK 7Q13662.D 11/14/24 13:18 n/a Instrument Blank
S7Q193-ICV193 7Q13663.D 11/14/24 13:32 n/a Initial cal verification 4
S7Q193-ICV193 7Q13664.D 11/14/24 13:46 n/a Initial cal verification 20
EtFOSAA out ↑ flag UJ
S7Q193-CC193 7Q13666.D 11/14/24 14:14 n/a Continuing cal 1.0LL

PFDA out ↑ flag UJ

S7Q193-CC193 7Q13713.D 11/15/24 01:11 n/a Continuing cal 4
S7Q193-ICCB 7Q13714.D 11/15/24 01:25 n/a Continuing Calibration Blank

Samples 11 (not reported) and 13
LORNG_RFW1144_10032024

S7Q193-CC193 7Q13725.D 11/15/24 03:59 n/a Continuing cal 4

Instrument GCMS8Q

11/14/24 all %RSD <20%
S8Q201-IBLK 8Q14504.D 11/13/24 14:46 n/a Instrument Blank
4151-50-2 EtFOSA 0.0014 J ug/L ND; no action
S8Q201-ICV201 8Q14505.D 11/13/24 14:59 n/a Initial cal verification 4
S8Q201-ICV201 8Q14506.D 11/13/24 15:13 n/a Initial cal verification 20
S8Q201-CC201 8Q14508.D 11/13/24 15:41 n/a Continuing cal 1.0LL

S8Q201-CC201 8Q14559.D 11/14/24 03:26 n/a Continuing cal 4
S8Q201-ICCB 8Q14560.D 11/14/24 03:40 n/a Continuing Calibration Blank

Samples 12,21,22

S8Q201-CC201 8Q14571.D 11/14/24 06:11 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_EB011_10032024	FC19376-17	PFOA
LORNG_RFW1147_10042024	FC19376-14	PFNS

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria

- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_OW20004_10032024 and LORNG_OW20004_10032024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19376	
			Location	BW01007	
			Sample Date	10/4/2024	
			Sample ID	LORNG_BW01007_10042024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	19.8	
		Perfluoropentanoic acid (PFPeA)	NG/L	59	
		Perfluorohexanoic acid (PFHxA)	NG/L	81.7	
		Perfluoroheptanoic acid (PFHpA)	NG/L	31.2	
		Perfluorooctanoic acid (PFOA)	NG/L	92.4	
		Perfluorononanoic acid (PFNA)	NG/L	4.5	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	9.4	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	14.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	430	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	10.3	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	444	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	15.4	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	3.9	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation subcontractor
Date:2/18/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19376																			
			Location	BW07001		BW07002		BW12006		BW20001		FIELDQC				JMW0991		JMW1665		JPZ7704		LF2MW2	
			Sample Date	10/4/2024		10/4/2024		10/4/2024		10/3/2024		10/3/2024				10/3/2024		10/3/2024		10/3/2024		10/3/2024	
			Sample ID	LORNG_BW07001_10042024		LORNG_BW07002_10042024		LORNG_BW12006_10042024		LORNG_BW20001_10032024		LORNG_EB010_10032024		LORNG_EB011_10032024		LORNG_EB012_10032024		LORNG_JMW0991_10032024		LORNG_JMW1665_10032024		LORNG_JPZ7704_10032024		LORNG_LF2MW2_10032024	
			QC Code	N		N		N		N		EB		EB		EB		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	19.7		12.3	J	12.6	J	9.7	J	3.8	U	3.7	U	3.6	U	4.5	U	4.8	J	5.6	J	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	42.1		35.4		39.7		19.3		1.9	U	1.9	U	1.8	U	2	J	7.3		12		1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	29.8		36.8		50.5		19.5		1.9	U	1.9	U	1.8	U	3.3	J	7.1		9.7		1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	24.7		17.9		23.4		19.9		1.9	U	1.9	U	1.8	U	1.2	J	5.3		4.2	J	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	29.2		33		28.2		19.9		0.94	U	2.4	J	0.91	U	6.5		5.2	J+	7.1		1.5	J
		Perfluorononanoic acid (PFNA)	NG/L	4.3		2	J	2.8	J	2.1	J	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	UJ	1.8	U	2.5	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	UJ	1.8	U	2.5	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.4		5.8		13.7		3.5	J	1.9	U	1.9	U	1.8	U	2.3	U	2.3	J	1.9	J	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	9.1		8		21		4.9		3.8	U	3.7	U	3.6	U	4.5	U	3	J	2.2	J	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	110		152		191		106		1.9	U	1.9	U	1.8	U	7.3		33.4		25.6		2.5	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	4.2		5		16.8		2.7	J	1.9	U	1.9	U	1.8	U	2.3	U	0.86	J	0.83	J	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	106		105		795		123		1.9	U	0.62	J	1.8	U	12.5	J	33.1		23.1		2.7	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	UJ	1.8	U	2.5	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	UJ	3.6	U	5.1	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.4	U	11	U	7.6	U	7.5	U	7.4	U	7.3	U	9.1	U	7.3	U	10	U	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	16.9	J	50.9		7.6	U	7.5	U	7.4	U	7.3	U	9.1	U	7.3	U	10	U	7.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.4	U	11	U	7.6	U	7.5	U	7.4	U	7.3	U	9.1	U	7.3	U	10	U	7.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2.4	J	2.7	U	1.1	J	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	27	U	19	U	19	U	19	U	18	U	23	U	18	U	25	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	27	U	19	U	19	U	19	U	18	U	23	U	18	U	25	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	U	3.6	U	5.1	U	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.7	U	5.3	U	3.8	U	3.8	U	3.7	U	3.6	U	4.5	UJ	3.6	U	5.1	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	2.7	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	U	1.8	U	2.5	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.3	U	13	U	9.5	U	9.4	U	9.3	U	9.1	U	11	U	9.1	U	13	U	9.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	27	U	19	U	19	U	19	U	18	U	23	U	18	U	25	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	27	U	19	U	19	U	19	U	18	U	23	U	18	U	25	U	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation subcontractor
Date:2/18/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19376											
		Location		LF3MW4	OW17002	OW20004		OW20005	RFW1144	RFW1147	SB/OW17001	USGS2			
		Sample Date		10/3/2024	10/3/2024	10/3/2024		10/3/2024	10/3/2024	10/4/2024	10/3/2024	10/3/2024			
		Sample ID		LORNG_LF3MW4_10032024	LORNG_OW17002_10032024	LORNG_OW20004_10032024	LORNG_OW20004_10032024FD	LORNG_OW20005_10032024	LORNG_RFW1144_10032024	LORNG_RFW1147_10042024	LORNG_SB/OW17001_10032024	LORNG_USGS2_40_10032024	LORNG_USGS2_125_10032024		
		QC Code		N	N	N	FD	N	N	N	N	N	N		
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.7 U	26.3	1.9 J	1.8 J	2.7 J	7.2 J	15.6 J	11.7 J	9.8 J	11.1 J		
		Perfluoropentanoic acid (PFPeA)	NG/L	2.6 J	69.4	1.8 U	1.9 U	3 J	14	37.8	33.8	16.1	17.1		
		Perfluorohexanoic acid (PFHxA)	NG/L	3.6 J	31.5	1.8 U	1.9 U	2.5 J	8.4	54.6	20.5	16.6	10.8		
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.4 J	19.7	1.8 U	1.9 U	1.8 J	5.3	24.1	6.9	7.2	6.4		
		Perfluorooctanoic acid (PFOA)	NG/L	7	9.7	0.91 U	0.93 U	3.2 J	5.5	39.3	5	23.5	10.2		
		Perfluorononanoic acid (PFNA)	NG/L	2.4 U	1.1 J	1.8 U	1.9 U	2.3 U	1.9 U	4.2	0.79 J	0.75 J	0.65 J		
		Perfluorodecanoic acid (PFDA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 UJ	1.9 U	2 U	1.8 U	1.8 U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluorododecanoic acid (PFDoA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.4 U	2.2 J	0.8 J	0.76 J	1 J	1.6 J	4	2.5 J	2.6 J	2.2 J		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.7 U	2.5 J	1 J	3.7 U	4.5 U	2 J	7.3	2.4 J	3.7 J	2.8 J		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.2	31.1	8.7	7.6	16.7	21	169	17.9	55.9	28.2		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	0.7 J	1.9 U	3.7 J	2 U	1.8 J	0.74 J		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	14.6	31.4	10.8	9.1	18.3	22.7	230	6.5	68.2	33.1		
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1 J	2 U	1.8 U	1.8 U		
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	9.4 U	7.8 U	7.3 U	7.5 U	9.1 U	7.6 U	7.8 U	7.8 U	7.3 U	7.1 U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	9.4 U	7.8 U	7.3 U	7.5 U	9.1 U	7.6 U	7.8 U	7.8 U	5.4 J	7.1 U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	9.4 U	7.8 U	7.3 U	7.5 U	9.1 U	7.6 U	7.8 U	7.8 U	7.3 U	7.1 U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	10.7	2 U	2.5 J	1.1 J		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 UJ	3.9 U	3.9 U	3.6 U	3.5 U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	24 U	19 U	18 U	19 U	23 U	19 U	19 U	20 U	18 U	18 U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	24 U	19 U	18 U	19 U	23 U	19 U	19 U	20 U	18 U	18 U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.7 U	3.9 U	3.6 U	3.7 U	4.5 U	3.8 U	3.9 U	3.9 U	3.6 U	3.5 U		
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.4 U	1.9 U	1.8 U	1.9 U	2.3 U	1.9 U	1.9 U	2 U	1.8 U	1.8 U		
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	12 U	9.7 U	9.1 U	9.3 U	11 U	9.5 U	9.7 U	9.8 U	9.1 U	8.8 U		
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	24 U	19 U	18 U	19 U	23 U	19 U	19 U	20 U	18 U	18 U		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	24 U	19 U	18 U	19 U	23 U	19 U	19 U	20 U	18 U	18 U		

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation subcontractor
Date:2/18/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19376	E1633DR	T	FC19376-17	LORNG_EB011_10032024	Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	IAG	NG/L
			FC19376-12	LORNG_JMW0991_10032024	Perfluorotridecanoic acid (PFTrDA)	2.3	U	2.3	UJ	MSL	NG/L
			FC19376-12	LORNG_JMW0991_10032024	Perfluorotetradecanoic acid (PFTeDA)	2.3	U	2.3	UJ	MSL	NG/L
			FC19376-12	LORNG_JMW0991_10032024	Perfluorooctanesulfonic acid (PFOS)	12.5	=	12.5	J	MSD	NG/L
			FC19376-12	LORNG_JMW0991_10032024	Perfluorodecanesulfonic acid (PFDS)	2.3	U	2.3	UJ	MSL	NG/L
			FC19376-12	LORNG_JMW0991_10032024	Perfluorododecanesulfonic acid (PFDoS)	4.5	U	4.5	UJ	MSL	NG/L
			FC19376-12	LORNG_JMW0991_10032024	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.5	U	4.5	UJ	MSL	NG/L
			FC19376-18	LORNG_JMW1665_10032024	Perfluorooctanoic acid (PFOA)	5.2	=	5.2	J+	EBL	NG/L
			FC19376-13	LORNG_RFW1144_10032024	Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	IVD	NG/L
			FC19376-14	LORNG_RFW1147_10042024	Perfluorononanesulfonic acid (PFNS)	1	J	1	J	IAG	NG/L

Prepared by:AKN
Date:2/13/25
Checked by:TC for EDS Validation company
Date:2/18/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19376-12	LORNG_JMW0991_10032024	Perfluorononanesulfonic acid (PFNS)	2.3	U	2.3			NG/L
FC19376-12	LORNG_JMW0991_10032024	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.5	U	4.5			NG/L
FC19376-13	LORNG_RFW1144_10032024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	IVD	NG/L

Prepared by:AKN
Date:2/13/25
Checked by:
Date:

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19378

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

January 17, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19378
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 09/24/2024 – 09/27/2024, and 09/30/2024 – 10/01/2024
Number of Samples: 70
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_EB100_09242024	FC19378-1	equipment blank	S2BVM
LORNG_SB05040_0-1_09242024	FC19378-2	soil	S4VM
LORNG_SB05040_0-1_09242024FD	FC19378-3	soil	S4VM
LORNG_SB06021_0-1_09252024	FC19378-4	soil	S4VM
LORNG_SB07030_0-1_09252024	FC19378-5	soil	S4VM
LORNG_SB07030_15-17_09252024	FC19378-6	soil	S4VM
LORNG_SB07032_0-1_09252024	FC19378-7	soil	S4VM
LORNG_SB07032_7-9_09252024	FC19378-8	soil	S4VM
LORNG_SB07033_0-1_09252024	FC19378-9	soil	S4VM
LORNG_SB07035_0-1_09252024	FC19378-10	soil	S2BVM
LORNG_SB07035_6-8_09252024	FC19378-11	soil	S2BVM
LORNG_SB16020_0-1_09252024	FC19378-12	soil	S2BVM
LORNG_EB101_09252024	FC19378-13	equipment blank	S2BVM
LORNG_EB102_09262024	FC19378-14	equipment blank	S2BVM
LORNG_SB01046_0-1_09262024	FC19378-15	soil	S2BVM
LORNG_SB06022_0-1_09262024	FC19378-16	soil	S2BVM
LORNG_SB06023_8-10_09262024	FC19378-17	soil	S2BVM
LORNG_SB07033_10-12_09252024	FC19378-18	soil	S2BVM
LORNG_SB07033_18-20_09252024	FC19378-19	soil	S2BVM
LORNG_SB07034_11-13_09262024FD	FC19378-20	soil	S2BVM
LORNG_SB18054_0-1_09262024	FC19378-21	soil	S2BVM
LORNG_SB18055_0-1_09262024	FC19378-22	soil	S2BVM
LORNG_SB18056_13-15_09262024	FC19378-23	soil	S2BVM
LORNG_SB20018_0-1_09272024	FC19378-24	soil	S2BVM
LORNG_EB103_09272024	FC19378-25	equipment blank	S2BVM
LORNG_EB106_10022024	FC19378-26	equipment blank	S2BVM
LORNG_SB20017_13-15_09272024	FC19378-27	soil	S2BVM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_SB20017_7-9_09272024	FC19378-28	soil	S2BVM
LORNG_SB20018_13-15_09272024	FC19378-29	soil	S2BVM
LORNG_SB20018_7-9_09272024	FC19378-30	soil	S2BVM
LORNG_SB20018_7-9_09272024FD	FC19378-31	soil	S2BVM
LORNG_SB06024_0-1_09262024	FC19378-32	soil	S2BVM
LORNG_SB05039_0-1_09242024	FC19378-33	soil	S2BVM
LORNG_SB07030_7-9_09252024	FC19378-34	soil	S2BVM
LORNG_SB07031_0-1_09252024	FC19378-35	soil	S2BVM
LORNG_SB07031_0-1_09252024FD	FC19378-36	soil	S2BVM
LORNG_SB07034_0-1_09262024	FC19378-37	soil	S2BVM
LORNG_SB07034_11-13_09262024	FC19378-38	soil	S2BVM
LORNG_SB07034_21-23_09262024	FC19378-39	soil	S2BVM
LORNG_SB07035_10-12_09252024	FC19378-40	soil	S2BVM
LORNG_SB16019_0-1_09242024	FC19378-41	soil	S2BVM
LORNG_SB16019_0-1_09242024FD	FC19378-42	soil	S2BVM
LORNG_SB18056_0-1_09262024	FC19378-43	soil	S2BVM
LORNG_SB06022_10-12_09262024	FC19378-44	soil	S2BVM
LORNG_SB06022_10-12_09262024FD	FC19378-45	soil	S2BVM
LORNG_SB06022_5-7_09262024	FC19378-46	soil	S2BVM
LORNG_SB06023_0-1_09262024	FC19378-47	soil	S2BVM
LORNG_SB16021_0-1_09262024	FC19378-48	soil	S2BVM
LORNG_SB16021_3-5_09262024	FC19378-49	soil	S2BVM
LORNG_SB18054_0-1_09262024FD	FC19378-50	soil	S2BVM
LORNG_SB18056_13-15_09262024FD	FC19378-51	soil	S2BVM
LORNG_SB18056_6-8_09262024	FC19378-52	soil	S2BVM
LORNG_SB18057_0-1_09262024	FC19378-53	soil	S2BVM
LORNG_SB01044_0-1_09302024	FC19378-54	soil	S2BVM
LORNG_SB01044_17-19_09302024	FC19378-55	soil	S2BVM
LORNG_SB01044_8-10_09302024	FC19378-56	soil	S2BVM
LORNG_SB01045_0-1_09302024	FC19378-57	soil	S2BVM
LORNG_SB01045_0-1_09302024FD	FC19378-58	soil	S2BVM
LORNG_SB01046_5-7_09262024	FC19378-59	soil	S2BVM
LORNG_SB01046_9-11_09262024	FC19378-60	soil	S2BVM
LORNG_SB07036_0-2_09302024	FC19378-61	soil	S2BVM
LORNG_SB07036_13-15_09302024	FC19378-62	soil	S2BVM
LORNG_SB07036_7-9_09302024	FC19378-63	soil	S2BVM
LORNG_SB20017_0-1_09272024	FC19378-64	soil	S2BVM
LORNG_EB104_09302024	FC19378-65	equipment blank	S2BVM
LORNG_EB105_10012024	FC19378-66	equipment blank	S2BVM
LORNG_SB01043_0-1_10012024	FC19378-67	soil	S2BVM
LORNG_SB01054_0-1_10012024	FC19378-68	soil	S2BVM
LORNG_SB05041_10-12_10012024	FC19378-69	soil	S2BVM
LORNG_SB12025_7-9_10012024	FC19378-70	soil	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

This Clip added by Tige Cunningham of WSP (2/6/25):sample IDs were revised after validation was completed by EDS.

From: Bagley, Eric <eric.bagley@wsp.com>
Sent: Thursday, January 30, 2025 1:56 PM
To: Cunningham, Tige <tige.cunningham@wsp.com>
Cc: Dinsmore, Madison <madison.dinsmore@wsp.com>; Papa, Lindsey <lindsey.papa@wsp.com>
Subject: Loring Sample ID Change Job FC19378

Hi Tige,

I noticed an error going back to the Soil Sampling Work Plan where we created a location ID that was already used in 2023:

	SB06021	LORNG_SB06021_0-1_09252024
	SB06022	LORNG_SB06022_0-1_09262024
	SB06022	LORNG_SB06022_10-12_09262024FD
	SB06022	LORNG_SB06022_10-12_09262024
	SB06022	LORNG_SB06022_5-7_09262024

	SB06025	LORNG_SB06025_0-1_09252024
	SB06026	LORNG_SB06026_0-1_09262024
	SB06026	LORNG_SB06026_10-12_09262024FD
	SB06026	LORNG_SB06026_10-12_09262024
	SB06026	LORNG_SB06026_5-7_09262024

Are you able to check to see if the validation report is complete for these samples and if not, notify the validator of the change? SGS job number for all of the above samples is FC19378.

I can create a revised COC if needed for a revised lab report, and we’ll notify Andrew for any ERPIMS-related changes needed and change the sample ID in the sample tracker with clear comments on what happened.

Thank you,

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion related to the results reported by the validator.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion with the following exception. The %Rs for NEtFOSAA was outside of acceptance criteria in the ICV associated with sample LORNG_SB07033_10-12_09252024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exception. The %R for PFDA was outside of acceptance criteria in the ISC associated with sample LORNG_SB07033_10-12_09252024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

The samples listed in the table below were submitted as equipment blanks in association with soil samples collected in this sampling event. No problems were found for this criterion with the following exceptions.

Equipment Blank	*Associated Samples*	*Positively Detected Analytes*
LORNG_EB100_09242024	*Samples collected on 09/24/2024*	*None*
LORNG_EB101_09252024	*Samples collected on 09/25/2024*	*PFOA, PFOS*
LORNG_EB102_09262024	*Samples collected on 09/26/2024*	*FOSA, NETFOSA, NETFOSE, NMEFOSA, NMEFOSE, PFHPA, PFHXA, PFOA, PFOS*
LORNG_EB103_09272024	*Samples collected on 09/27/2024*	*FOSA, NETFOSA, NETFOSE, PFHPA, PFOA*
LORNG_EB104_09302024	*Samples collected on 09/30/2024*	*FOSA, NETFOSA, NETFOSE, NMEFOSA, NMEFOSE, PFHPA, PFHXA, PFOA, PFOS*

LORNG_EB105_10012024	*Samples collected on 10/01/2024*	*None*
LORNG_EB106_10022024	*Samples collected on 10/02/2024 (none in this SDG)*	*FOSA, PFOS*

Positive results reported for the impacted analytes in the associated samples have been evaluated and qualified as appropriate per validation guidance.
WSP reviewed qualifiers added to soil results by EDS due to low level EB contamination. Region 1 guidance was used and professional judgment was made by WSP to not qualify the detections in the soil samples as not detected (U) from the low level detections reported in the Equipment Blanks. The soil detections for PFOS and/or PFOA were less than the LOQ and were reported by the laboratory as estimated (J). The (J) qualifier was retained during validation and a reason code added of EBL or EBG to alert the end user that the soil result is associated with an equipment blank that had low level detections.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times. Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B and Level 4 data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for PFHxA during the analyses of samples LORNG_SB07030_15-17_09252024 and LORNG_EB102_09262024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

The transition mass ratios were outside the established ratio limits for PFHxA, PFNS, and FOSA during the analysis of sample LORNG_SB07030_0-1_09252024 indicating some degree of uncertainty in the qualitative identification of the analytes. The impacted results have been qualified "J" on this basis.

Additional target compound identification criterion was verified as part of the Level 4 data validation. No anomalies were identified.

9. COMPOUND QUANTIFICATION

Target compound quantitation was verified as part of the Level 4 data validation. No anomalies were identified.

Manual integrations were reviewed at the Stage 4 level. No anomalies were identified.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_SB07032_0-1_09252024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_SB06023_8-10_09262024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_SB16021_0-1_09262024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_SB18057_0-1_09262024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_SB01043_0-1_10012024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_SB01045_0-1_09302024 and LORNG_SB01045_0-1_09302024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB05040_0-1_09242024 and LORNG_SB05040_0-1_09242024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB06022_10-12_09262024 and LORNG_SB06022_10-12_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB07031_0-1_09252024 and LORNG_SB07031_0-1_09252024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB07034_11-13_09262024 and LORNG_SB07034_11-13_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB16019_0-1_09242024 and LORNG_SB16019_0-1_09242024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB18054_0-1_09262024 and LORNG_SB18054_0-1_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB18056_13-15_09262024 and LORNG_SB18056_13-15_09262024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_SB20018_7-9_09272024 and LORNG_SB20018_7-9_09272024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems requiring qualification of sample results were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were reanalyzed to confirm results.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_SB20017_13-15_09272024 was submitted for split sample analyses. The sample was also analyzed by Bureau Veritas. The split sample results are located in SDG C4V7278. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks			x
Calibration Percent Relative Standard Deviation and Percent Difference			x
Instrument Sensitivity Check			x
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

Data Qualification Reason Codes

Reason Code	Reason Code Description
A	Serial dilution
A1	Ambient Blank
A2	Dissolved concentration > total concentration RPD exceeded criteria.
B	The analyte was found in an associated blank as well as in the sample.
B2	CCB
B3	CCB - Neg
B4	Grinding Blank
C	LCS Recovery
C1	Reference Recovery
C2	Reference Recovery RPD
D	MS RPD
D1	Lab Replicate RPD
D2	No precision available
D3	Field Duplicate RPD
D4	Field Triplicate RSD
D5	Laboratory Triplicate RSD
F	Field Blank
F1	Hydrocarbon pattern does not match standard
G1	Initial Calibration RRF
G2	Initial Calibration RSD/r^2/r
G3	ICV RRF
H1	Test Hold Time
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
J	CRA/CRI Recovery
K	An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.
L	Lab Blank
L1	Lab Blank - Neg
LS	Low Level LCS Recovery
M	MS Recovery
M2	Post Spike
N	Blank - No Action
N1	Non-extracted Internal Standard
O	ICS
P	Sample preservation/collection requirement not met.
P1	Column RPD
P2	Improper preparation/extraction
P3	Vial Contamination
P4	Cleanup Standard Recovery
P5	PCDPE interference
P6	Matrix Interference
Q	Encore sample holding time exceeded by more than 2X.
Q1	Material Blank
Q2	Encore sample holding time exceeded by less than 2X.
R	Exceeds LinearCalibration Range
R1	Retention Time/Relative Retention Time not met
R2	Relative Retention Time not met
S	Internal standard

Data Qualification Reason Codes

T	Trip Blank
TI	Tentatively Identified Compound
TR	Trace Level Detect
U	Receipt Temperature
V	Equipment Blank
V1	ICV
V2	CCV
V3	CCV RRF
V4	Sample Receipt Condition
V5	Ending Continuing Calibration Verification
V6	Low Level Calibration Verification
V7	Interference Check Sample A
V8	Interference Check Sample AB
V9	Interference Check Sample A - Negative
W	Column breakdown (pesticides/8270)
X	Raised reporting limit
Y	Cooler temperature greater than 10 degreec C.
Y1	False Positive
Y2	Data rejected due to radiological anomolies
Y3	Non-accredited analyte/compound. Accreditation not offered at time of analyses for the analyte/compound by the stated method and matrix.
Y4	Performance Check - Degradation of DDT
Y5	Extracted Internal Standard
Y6	Analyte not confirmed on second column.
Y7	Signal to Noise Ratio not met
Y8	CCV Frequency not met
Y9	Ion abundance ratios are outside criteria - estimated maximum possible concentration (EMPC) reported
Z	LCS RPD
Z1	Data rejected, more valid data available.
Z2	Detection Level not met uncertainty greater than DL
Z3	Severe negative result.
Z4	MDA Greater than RDL.
Z5	Ion Ratio
Z6	Sample or the associated closing CCV was analyzed past the 12-hour time period from Tune or opening CCV
Z7	Non-accredited analyte/compound
Z8	Low percent solids
Z9	Compound quantitation not verifiable

Calculation Documentation

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS3T
Curve Date: 11/11/2024
Compound: PFOS
Internal Standard: 13C8-PFOS

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
499	5969	0.186	2.5	0.083598593	0.0744	0.00553536	1.124
1032	6300	0.371	2.5	0.163809524	0.1484	0.02202256	1.104
3513	6957	1.16	2.5	0.504959034	0.464	0.215296	1.088
6992	6739	2.32	2.5	1.037542662	0.928	0.861184	1.118
14762	6786	4.64	2.5	2.175361037	1.856	3.444736	1.172
35743	7319	11.6	2.5	4.883590654	4.64	21.5296	1.052
76093	7489	23.2	2.5	10.1606356	9.28	86.1184	1.095
191035	7165	58	2.5	26.66224703	23.2	538.24	1.149
SUM OF EACH COLUMN :				45.6717	40.5908	650.4367739	8.9025

CALIBRATION MODELS:

Average Response Factor:
Cx = Ax*Cis/Ais/RF

			Results
Average RF	1.113	AVERAGE(RF)	1.1129
RSD	3.3%	STDEV(RF)/(AveRF)	3.332

Linear Regression:

y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
Slope (m)	1.14525	1.12603	1.11173	SLOPE(RatioY,RatioX)
Intercept (b)	-0.10188	-0.00435	0.000356	INTERCEPT(RatioY,RatioX)
CC (R)	0.99971	0.99947	0.99929	CORREL(RatioY,RatioX)
COD (R^2)	0.99943	0.99894	0.99858	POWER(R,2)

Quadratic Regression:

$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
x^2 Coefficient (a)	0.00429	0.00427	0.00062	LINEST(RatioY,RatioX:RatioX^2,1,1)
x Coefficient (b)	1.04775	1.04839	1.11556	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
Intercept (c)	0.04373	0.04278	-0.00195	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
COD (R^2)	0.99992			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S3T8-ICV8	3T490.D	60318	7461	2.5	18.162	17.870	17.959	18.179	18.617	18.612	18.049	18.16
S3T8-CC8	3T503.D	9213	8483	2.5	2.440	2.593	2.421	2.441	2.477	2.478	2.437	2.44
FC19378-2	3T510.D	993	6336	2.5	0.352	0.565	0.358	0.352	0.269	0.272	0.356	0.35
FC19378-3	3T511.D	1141	6367	2.5	0.403	0.614	0.408	0.402	0.323	0.325	0.406	0.4
FC19378-4	3T512.D	2655	6270	2.5	0.951	1.147	0.950	0.951	0.905	0.906	0.953	0.95
FC19378-5	3T513.D	75032	6323	2.5	26.659	26.126	26.356	26.684	27.014	27.008	26.441	26.66
FC19378-6	3T514.D	25016	6270	2.5	8.963	8.932	8.868	8.971	9.275	9.272	8.928	8.96
FC19378-7	3T517.D	68146	5992	2.5	25.550	25.048	25.259	25.574	25.930	25.924	25.347	25.55
FC19378-7 MS	3T518.D	82577	6371	2.5	29.119	28.516	28.786	29.146	29.405	29.399	28.865	29.12
FC19378-7 MSD	3T519.D	69389	5243	2.5	29.732	29.112	29.393	29.761	29.999	29.993	29.469	29.73
FC19378-8	3T520.D	0	6742	2.5	0.000	0.222	0.010	-0.001	-0.104	-0.102	0.004	ND
FC19378-9	3T521.D	2712	7029	2.5	0.867	1.065	0.866	0.867	0.815	0.817	0.869	0.87
OP5834-BS	3T497.D	6630	5726	2.5	2.601	2.750	2.580	2.603	2.647	2.648	2.598	2.6
OP5834-MB	3T499.D	0	5819	2.5	0.000	0.222	0.010	-0.001	-0.104	-0.102	0.004	ND

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS3T
Curve Date: 11/11/2024
Compound: 13C8-PFOS
Internal Standard: 13C4-PFOS

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
5960	6292	2.5	2.5	0.948664971	1	1	0.949
6300	6338	2.5	2.5	0.994004418	1	1	0.994
6957	6813	2.5	2.5	1.021136063	1	1	1.021
6739	6193	2.5	2.5	1.088164056	1	1	1.088
6786	7044	2.5	2.5	0.963373083	1	1	0.963
7319	7213	2.5	2.5	1.014695688	1	1	1.015
7489	7119	2.5	2.5	1.051973592	1	1	1.052
7165	7242	2.5	2.5	0.989367578	1	1	0.989
SUM OF EACH COLUMN :				8.0714	8	8	8.0714

CALIBRATION MODELS:

			reported
Average Response Factor:	**Average RF**	1.009	1.009
Cx = Ax*Cis/Ais/RF	**RSD**	4.5%	4.531

AVERAGE(RF)
STDEV(RF)/(AveRF)

Linear Regression:

y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

	Weighting	Equal	1/X	$1/X^2$	Equation
	Slope (m)	#DIV/0!	#DIV/0!	#DIV/0!	SLOPE(RatioY,RatioX)
	Intercept (b)	#DIV/0!	#DIV/0!	#DIV/0!	INTERCEPT(RatioY,RatioX)
	CC (R)	#DIV/0!	#DIV/0!	#DIV/0!	CORREL(RatioY,RatioX)
	COD (R^2)	#DIV/0!	#DIV/0!	#DIV/0!	POWER(R,2)

Quadratic Regression:

$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

	Weighting	Equal	1/X	$1/X^2$	Equation
	x^2 Coefficient (a)	0.00000	#DIV/0!	#DIV/0!	LINEST(RatioY,RatioX:RatioX^2,1,1)
	x Coefficient (b)	0.00000	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
	Intercept (c)	1.00892	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
	COD (R^2)	0.05347			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S3T8-ICV8	3T490.D	7461	7326	2.5	2.524	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.52
S3T8-CC8	3T503.D	8483	8106	2.5	2.593	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.59
FC19378-2	3T510.D	6336	9626	2.5	1.631	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.63
FC19378-3	3T511.D	6367	9065	2.5	1.740	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.74
FC19378-4	3T512.D	6270	9793	2.5	1.586	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.59
FC19378-5	3T513.D	6323	9371	2.5	1.672	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.67
FC19378-6	3T514.D	6270	10283	2.5	1.511	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.51
FC19378-7	3T517.D	5992	9638	2.5	1.541	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.54
FC19378-7 MS	3T518.D	6371	9886	2.5	1.597	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.6
FC19378-7 MSD	3T519.D	5243	10036	2.5	1.294	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.29
FC19378-8	3T520.D	6742	10064	2.5	1.660	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.66
FC19378-9	3T521.D	7029	10339	2.5	1.685	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.68
OP5834-BS	3T497.D	5726	7965	2.5	1.781	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.78
OP5834-MB	3T499.D	5819	8788	2.5	1.641	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.64

Final Sample Result Calculation

PFAS
method 1633

on column result (ug/L) x 1L/1000 ml x final volume(ml)/initial sample amount (g) x dilution factor 1/solids= calculated result (ug/g = mg/kg)

Sample	Analyte	On column results (ug/L)	Final Prep Volume (ml)	Initial Sample amount (g)	Dilution Factor	Calculate result (mg/kg)	Reported Result (mg/kg)	solids
FC19378-2	PFOS	0.35	5	1.01	1	0.002182208	0.0022	0.794
FC19378-3	PFOS	0.4	5	0.95	1	0.002678452	0.0027	0.786
FC19378-4	PFOS	0.95	5	0.96	1	0.006287061	0.0063	0.787
FC19378-5	PFOS	26.66	5	0.99	1	0.140991062	0.141	0.955
FC19378-6	PFOS	8.96	5	0.97	1	0.049290893	0.0493	0.937
FC19378-7	PFOS	25.55	5	1.04	1	0.136485043	0.136	0.9
FC19378-8	PFOS	ND	5	1.05	1	#VALUE!	ND	0.909
FC19378-9	PFOS	0.87	5	0.97	1	0.005136926	0.0051	0.873

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DLW

Date Validated: 01/13/2025

Reviewed: 1/16/25

Project: Loring AFB

SDG: FC19378

LAB: SGS Orlando

Samples Collected: 09/24/2024 – 09/27/2024, and 09/30/2024 – 10/01/2024

70 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/2 at 4.2 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

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Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 09/24/2024 – 09/27/2024, and 09/30/2024 – 10/01/2024
Extracted 10/15/2024; 10/16/2024; 10/17/2024; 10/21/2024
11/05/2024 REs
Analyzed 11/01/2024 ; 11/06/2024; 11/11/2024; 11/13/2024; 11/12/2024; 11/15/2024

All ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP5834-LLBS	ok
OP5869-LLBS	ok
OP5854-LLBS	ok
OP5882-LLBS	ok
OP5941-LLBS	ok

OP5834-BS	3:3-FTCA ↑ associated with samples 2,3,4,5,6,7,8,9,10,11,12 All ND; no action
OP5869-BS	ok
OP5854-BS	ok
OP5882-BS	ok
OP5941-BS	ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

FC19378-7 **LORNG_SB07032_0-1_09252024** **MS/MSD**
PFOS ok 4X rule
All ok

FC19378-17 **LORNG_SB06023_8-10_09262024** **MS/MSD**
All ok

FC19378-48 **LORNG_SB16021_0-1_09262024** **MS/MSD**
All ok

FC19378-53 **LORNG_SB18057_0-1_09262024** **MS/MSD**
All ok

FC19378-67 **LORNG_SB01043_0-1_10012024** **MS/MSD**
All ok

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

COMPARED ON COLUMN RESULTS IF EVALUATING FOR 2X-5X BLANK

FB/EBs
LORNG_EB100_09242024
associated with samples collected on 09/24/2024
ND

LORNG_EB101_09252024
associated with samples collected 09/25/2024
PFOA 1.4 J ng/L <LOQ (on column 0.12 µg/L) QUALIFIED U PER TABLE ABOVE
PFOS 0.67 J ng/L <LOQ (on column 0.06 µg/L) QUALIFIED U PER TABLE ABOVE

LORNG_EB102_09262024
associated with samples collected on 09/26/2024
FOSA 43.5 ng/L >LOQ ND; NO ACTION
NETFOSA 5.7 J ng/L <LOQ ND; NO ACTION
NETFOSE 21.7 J ng/L <LOQ ND; NO ACTION
NMEFOSA 3.9 J ng/L <LOQ ND; NO ACTION
NMEFOSE 6.8 J ng/L <LOQ ND; NO ACTION
PFHPA 2.6 J ng/L <LOQ ND; NO ACTION
PFHXA 1.3 J ng/L <LOQ ND; NO ACTION
PFOA 15.1 ng/L >LOQ ND; NO ACTION
PFOS 4.4 ng/L >LOQ (ON COLUMN 0.41 µg/L) QUALIFIED U/J+ PER TABLE ABOVE

LORNG_EB103_09272024
associated with samples collected on 09/27/2024
FOSA 3 J ng/L <LOQ ND; NO ACTION
NETFOSA 1.7 J ng/L <LOQ ND; NO ACTION
NETFOSE 8.7 J ng/L <LOQ ND; NO ACTION
PFHPA 0.87 J ng/L <LOQ ND; NO ACTION
PFOA 3.8 J ng/L <LOQ ND; NO ACTION

LORNG_EB106_10022024
associated with samples collected on 10/02/2024 (NONE IN THIS SDG; ASSOCIATED SAMPLES IN SDG C4V9659)
FOSA 0.87 J ng/L <LOQ
PFOS 1.3 J ng/L <LOQ

LORNG_EB104_09302024
associated with samples collected on 09/30/2024
FOSA 21.1 ng/L >LOQ ND; NO ACTION
NETFOSA 17.1 ng/L >LOQ ND; NO ACTION
NETFOSE 19.2 J ng/L <LOQ ND; NO ACTION
NMEFOSA 6.1 J ng/L <LOQ ND; NO ACTION
NMEFOSE 11.5 J ng/L <LOQ ND; NO ACTION
PFHPA 1.2 J ng/L <LOQ ND; NO ACTION
PFHXA 0.72 J ng/L <LOQ ND; NO ACTION
PFOA 4.6 ng/L >LOQ QUALIFIED U PER TABLE ABOVE
PFOS 1.3 J ng/L <LOQ (ON COLUMN 0.12 µg/L) ND OR >5x; NO ACTION

LORNG_EB105_10012024
associated with samples collected on 10/01/2024
ND

OP5834-MB all ND
OP5869-MB all ND
OP5854-MB all ND
OP5882-MB all ND
OP5941-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X

- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS3T

11/11/24 all %RSD <20%

S3T8-IBLK 3T488.D 11/11/24 15:28 n/a Instrument Blank
S3T8-ICV8 3T489.D 11/11/24 15:43 n/a Initial cal verification 4
S3T8-ICV8 3T490.D 11/11/24 15:58 n/a Initial cal verification 20
S3T8-CC8 3T491.D 11/11/24 16:13 n/a Continuing cal 4
S3T8-CC8 3T492.D 11/11/24 16:29 n/a Continuing cal 1.0LL

S3T8-CC8 3T503.D 11/11/24 19:14 n/a Continuing cal 4
S3T8-ICCB 3T504.D 11/11/24 19:29 n/a Continuing Calibration Blank

Samples 2,3,4,5,6

S3T8-CC8 3T515.D 11/11/24 22:15 n/a Continuing cal 4
S3T8-ICCB 3T516.D 11/11/24 22:30 n/a Continuing Calibration Blank

Samples 7,8,9,10,11,12

S3T8-ECC8 3T527.D 11/12/24 01:16 n/a Ending cal 4
S3T8-ICCB 3T528.D 11/12/24 01:31 n/a Continuing Calibration Blank

11/12/24 all %RSD <20%

S3T9-IBLK 3T550.D 11/12/24 16:58 n/a Instrument Blank
S3T9-ICV9 3T551.D 11/12/24 17:13 n/a Initial cal verification 4
S3T9-ICV9 3T552.D 11/12/24 17:28 n/a Initial cal verification 20
S3T9-CC9 3T553.D 11/12/24 17:43 n/a Continuing cal 4
S3T9-CC9 3T554.D 11/12/24 17:58 n/a Continuing cal 1.0LL

Samples 36,37,38,39,40,41,42

S3T9-CC9 3T565.D 11/12/24 20:44 n/a Continuing cal 4
S3T9-ICCB 3T566.D 11/12/24 20:59 n/a Continuing Calibration Blank

Samples 43,44,45,46,47,48,50

S3T9-CC9 3T577.D 11/12/24 23:45 n/a Continuing cal 4
S3T9-ICCB 3T578.D 11/13/24 00:00 n/a Continuing Calibration Blank

Samples 51,52,54,55

S3T9-ECC9 3T583.D 11/13/24 01:15 n/a Ending cal 4
S3T9-ICCB 3T584.D 11/13/24 01:30 n/a Continuing Calibration Blank

S3T10-IBLK 3T590.D 11/13/24 11:32 00:45 Instrument Blank
S3T10-CC9 3T592.D 11/13/24 12:03 n/a Continuing cal 1.0LL
S3T10-CC9 3T627.D 11/13/24 20:51 n/a Continuing cal 4
S3T10-ICCB 3T628.D 11/13/24 21:06 n/a Continuing Calibration Blank

Sample 49

S3T10-ECC9 3T638.D 11/13/24 23:36 n/a Ending cal 4
S3T10-ICCB 3T639.D 11/13/24 23:51 n/a Continuing Calibration Blank

Instrument GCMS7Q

10/31/24 all %RSD <20%

S7Q183-IBLK 7Q12875.D 10/31/24 20:50 n/a Instrument Blank
S7Q183-ICV183 7Q12876.D 10/31/24 21:04 n/a Initial cal verification 4
S7Q183-ICV183 7Q12877.D 10/31/24 21:18 n/a Initial cal verification 20
S7Q183-CC183 7Q12878.D 10/31/24 21:32 n/a Continuing cal 4
S7Q183-CC183 7Q12879.D 10/31/24 21:46 n/a Continuing cal 1.0LL

S7Q183-CC183 7Q12911.D 11/01/24 05:13 n/a Continuing cal 4
S7Q183-ICCB 7Q12912.D 11/01/24 05:27 n/a Continuing Calibration Blank

Sample 1

S7Q183-CC183 7Q12923.D 11/01/24 08:01 n/a Continuing cal 4
S7Q183-ICCB 7Q12924.D 11/01/24 08:15 n/a Continuing Calibration Blank

Samples 13,14,25,26,65,66

S7Q183-ECC183 7Q12933.D 11/01/24 10:21 n/a Ending cal 4
S7Q183-ICCB 7Q12934.D 11/01/24 10:35 n/a Continuing Calibration Blank

11/01/24 all %RSD <20%

S7Q184-IBLK 7Q12950.D 11/01/24 14:42 n/a Instrument Blank
S7Q184-ICV184 7Q12951.D 11/01/24 14:56 n/a Initial cal verification 4
S7Q184-ICV184 7Q12952.D 11/01/24 15:09 n/a Initial cal verification 20
S7Q184-CC184 7Q12953.D 11/01/24 15:23 n/a Continuing cal 4
S7Q184-CC184 7Q12954.D 11/01/24 15:37 n/a Continuing cal 1.0LL

Sample 14

S7Q184-CC184 7Q12963.D 11/01/24 17:43 n/a Continuing cal 4

11/06/24 all %RSD <20%

S7Q187-IBLK 7Q13222.D 11/06/24 18:54 n/a Instrument Blank
S7Q187-ICV187 7Q13223.D 11/06/24 19:08 n/a Initial cal verification 4
S7Q187-ICV187 7Q13224.D 11/06/24 19:22 n/a Initial cal verification 20
S7Q187-CC187 7Q13225.D 11/06/24 19:35 n/a Continuing cal 4
S7Q187-CC187 7Q13226.D 11/06/24 19:49 n/a Continuing cal 1.0LL

Samples 13,25,26,65

S7Q187-CC187 7Q13236.D 11/06/24 22:09 n/a Continuing cal 4

S7Q187-ICCB 7Q13237.D 11/06/24 22:23 n/a Continuing Calibration Blank

11/06/24 all %RSD <20%

S7Q189-IBLK 7Q13390.D 11/10/24 17:32 n/a Instrument Blank
S7Q189-ICV189 7Q13391.D 11/10/24 17:46 n/a Initial cal verification 4
S7Q189-ICV189 7Q13392.D 11/10/24 18:00 n/a Initial cal verification 20
S7Q189-CC189 7Q13393.D 11/10/24 18:14 n/a Continuing cal 4
S7Q189-CC189 7Q13394.D 11/10/24 18:28 n/a Continuing cal 1.0LL
S7Q191-IBLK 7Q13490.D 1 11/12/24
S7Q191-CC189 7Q13491.D 11/12/24 15:01 n/a Continuing cal 4
S7Q191-CC189 7Q13492.D 11/12/24 15:15 n/a Continuing cal 1.0LL

Samples 15,16,17

S7Q191-CC189 7Q13504.D 11/12/24 18:02 n/a Continuing cal 4
S7Q191-ICCB 7Q13505.D 11/12/24 18:16 n/a Continuing Calibration Blank

Samples 19,20,21,22,23,24,27,28,29,30

S7Q191-CC189 7Q13516.D 11/12/24 20:50 n/a Continuing cal 4
S7Q191-ICCB 7Q13517.D 11/12/24 21:04 n/a Continuing Calibration Blank

Samples 31,32,33,34,35

S7Q191-CC189 7Q13523.D 11/12/24 22:28 n/a Continuing cal 4
S7Q191-ICCB 7Q13524.D 11/12/24 22:42 n/a Continuing Calibration Blank

Samples 53,56,57,58,59

S7Q191-CC189 7Q13535.D 11/13/24 01:16 n/a Continuing cal 4
S7Q191-ICCB 7Q13536.D 11/13/24 01:30 n/a Continuing Calibration Blank

Samples 60,61,62,63,64,67,68,69

S7Q191-CC189 7Q13547.D 11/13/24 04:04 n/a Continuing cal 4
S7Q191-ICCB 7Q13548.D 11/13/24 04:18 n/a Continuing Calibration Blank

Sample 70

S7Q191-CC189 7Q13558.D 11/13/24 06:38 n/a Continuing cal 4

11/14/24 all %RSD <20%
S7Q193-IBLK 7Q13662.D 11/14/24 13:18 02:34 Instrument Blank
335-76-2 Perfluorodecanoic acid 0.10 J ug/kg ND in associated no action
S7Q193-ICV193 7Q13663.D 11/14/24 13:32 n/a Initial cal verification 4
S7Q193-ICV193 7Q13664.D 11/14/24 13:46 n/a Initial cal verification 20
EtFOSAA >30% flag UJ
S7Q193-CC193 7Q13666.D 11/14/24 14:14 n/a Continuing cal 1.0LL
PFDA >130% flag UJ

S7Q193-CC193 7Q13736.D 11/15/24 06:33 n/a Continuing cal 4

S7Q193-ICCB 7Q13737.D 11/15/24 06:47 n/a Continuing Calibration Blank

Sample 18 LORNG_SB07033_10-12_09252024

S7Q193-ECC193 7Q13748.D 11/15/24 09:20 n/a Ending cal 4
S7Q193-ICCB 7Q13749.D 11/15/24 09:34 n/a Continuing Calibration Blank

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_SB07030_0-1_09252024	FC19378-5	PFHxA, PFNS, FOSA
LORNG_SB07030_15-17_09252024	FC19378-6	PFHxA
LORNG_EB102_09262024	FC19378-14	PFHxA

FC19378-57 PFOA qualified U due to FB; no action

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_SB01045_0-1_09302024 and LORNG_SB01045_0-1_09302024FD all ok

LORNG_SB05040_0-1_09242024 and LORNG_SB05040_0-1_09242024FD all ok

LORNG_SB06022_10-12_09262024 and LORNG_SB06022_10-12_09262024FD all ok

LORNG_SB07031_0-1_09252024 and LORNG_SB07031_0-1_09252024FD all ok

LORNG_SB07034_11-13_09262024 and LORNG_SB07034_11-13_09262024FD all ok

LORNG_SB16019_0-1_09242024 and LORNG_SB16019_0-1_09242024FD all ok

LORNG_SB18054_0-1_09262024 and LORNG_SB18054_0-1_09262024FD all ok

LORNG_SB18056_13-15_09262024 and LORNG_SB18056_13-15_09262024FD all ok

LORNG_SB20018_7-9_09272024 and LORNG_SB20018_7-9_09272024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG	FC19378																			
		Location	SB01043		SB01044				SB01045				SB01046				SB01054		SB05039		SB05040	
		Sample Date	10/1/2024		9/30/2024				9/30/2024				9/26/2024				10/1/2024		9/24/2024		9/24/2024	
		Sample ID	LORNG_SB01043_0-1_10012024		LORNG_SB01044_0-1_09302024		LORNG_SB01044_8-10_09302024		LORNG_SB01044_17-19_09302024		LORNG_SB01045_0-1_09302024		LORNG_SB01045_0-1_09302024FD		LORNG_SB01046_0-1_09262024		LORNG_SB01046_5-7_09262024		LORNG_SB01046_9-11_09262024		LORNG_SB01054_0-1_10012024		LORNG_SB05039_0-1_09242024		LORNG_SB05040_0-1_09242024		LORNG_SB05040_0-1_09242024FD	
		QC Code	N		N		N		N		N		FD		N		N		N		N		N		FD	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0061	U	0.0045	U	0.0043	U	0.0044	U	0.0063	U	0.0063	U	0.005	U	0.0046	U	0.0045	U	0.0049	U	0.0046	U	0.005	U	0.0054	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0019	J	0.0013	J	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0044	J	0.0047	J	0.0016	J	0.0023	U	0.0022	U	0.0014	J	0.0023	U	0.0025	U	0.0027	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0061	J	0.0069		0.0022	U	0.0022	U	0.0262		0.0294		0.0015	J	0.0023	U	0.0022	U	0.0027	J	0.0011	J	0.0022	J	0.0027	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.015	U	0.011	U	0.011	U	0.011	U	0.016	U	0.016	U	0.012	U	0.011	U	0.011	U	0.012	U	0.012	U	0.012	U	0.013	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.015	U	0.011	U	0.011	U	0.011	U	0.016	U	0.016	U	0.012	U	0.011	U	0.011	U	0.012	U	0.012	U	0.012	U	0.013	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0061	U	0.0045	U	0.0043	U	0.0044	U	0.0063	U	0.0063	U	0.005	U	0.0046	U	0.0045	U	0.0049	U	0.0046	U	0.005	U	0.0054	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0061	U	0.0045	U	0.0043	U	0.0044	U	0.0063	U	0.0063	U	0.005	U	0.0046	U	0.0045	U	0.0049	U	0.0046	U	0.005	U	0.0054	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0061	U	0.0045	U	0.0043	U	0.0044	U	0.0063	U	0.0063	U	0.005	U	0.0046	U	0.0045	U	0.0049	U	0.0046	U	0.005	U	0.0054	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.003	U	0.0022	U	0.0022	U	0.0022	U	0.0031	U	0.0031	U	0.0025	U	0.0023	U	0.0022	U	0.0025	U	0.0023	U	0.0025	U	0.0027	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0076	U	0.0056	U	0.0054	U	0.0055	U	0.0078	U	0.0079	U	0.0062	U	0.0057	U	0.0056	U	0.0062	U	0.0058	U	0.0062	U	0.0067	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.038	U	0.028	U	0.027	U	0.028	U	0.039	U	0.039	U	0.031	U	0.028	U	0.028	U	0.031	U	0.029	U	0.031	U	0.033	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.038	U	0.028	U	0.027	U	0.028	U	0.039	U	0.039	U	0.031	U	0.028	U	0.028	U	0.031	U	0.029	U	0.031	U	0.033	U

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG	FC19378																	
		Location	SB05041	SB06023		SB06024	SB06025	SB06026				SB07030								
		Sample Date	10/1/2024	9/26/2024		9/26/2024	9/25/2024	9/26/2024				9/25/2024								
		Sample ID	LORNG_SB05041_10-12_10012024	LORNG_SB06023_0-1_09262024	LORNG_SB06023_8-10_09262024	LORNG_SB06024_0-1_09262024	LORNG_SB06025_0-1_09252024	LORNG_SB06026_0-1_09262024	LORNG_SB06026_5-7_09262024	LORNG_SB06026_10-12_09262024	LORNG_SB06026_10-12_09262024FD	LORNG_SB07030_0-1_09252024	LORNG_SB07030_7-9_09252024	LORNG_SB07030_15-17_09252024						
		QC Code	N	N	N	N	N	N	N	N	FD	N	N	N						
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0041	U	0.0047	U	0.0042	U	0.004	U	0.0053	U	0.0054	U	0.0046	U	0.0042	U	0.0043	U	0.0042	U	0.0049	U	0.0044	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0014	J	0.0011	J	0.00059	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0009	J	0.011		0.0014	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0028	J	0.0024	U	0.0022	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0038	J	0.0014	J	0.0022	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0252		0.0798		0.0127	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0028	J	0.0079		0.00084	J
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.002	U	0.0042	J	0.0021	U	0.0029	J	0.0063	J	0.002	J	0.0023	U	0.0021	U	0.0022	U	0.141		0.0026	J	0.0493	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.001	J	0.0024	U	0.0022	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0012	J	0.0024	U	0.0022	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0036	J	0.0024	U	0.0022	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0037	J	0.0024	U	0.0022	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.01	U	0.012	U	0.011	U	0.01	U	0.013	U	0.013	U	0.011	U	0.011	U	0.011	U	0.011	U	0.012	U	0.011	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.01	U	0.012	U	0.011	U	0.01	U	0.013	U	0.013	U	0.011	U	0.011	U	0.011	U	0.011	U	0.012	U	0.011	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0041	U	0.0047	U	0.0042	U	0.004	U	0.0053	U	0.0054	U	0.0046	U	0.0042	U	0.0043	U	0.0042	U	0.0049	U	0.0044	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0041	U	0.0047	U	0.0042	U	0.004	U	0.0053	U	0.0054	U	0.0046	U	0.0042	U	0.0043	U	0.0042	U	0.0049	U	0.0044	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0041	U	0.0047	U	0.0042	U	0.004	U	0.0053	U	0.0054	U	0.0046	U	0.0042	U	0.0043	U	0.0042	U	0.0049	U	0.0044	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.002	U	0.0024	U	0.0021	U	0.002	U	0.0026	U	0.0027	U	0.0023	U	0.0021	U	0.0022	U	0.0021	U	0.0024	U	0.0022	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0051	U	0.0059	U	0.0053	U	0.005	U	0.0066	U	0.0067	U	0.0057	U	0.0053	U	0.0054	U	0.0053	U	0.0061	U	0.0055	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.026	U	0.03	U	0.027	U	0.025	U	0.033	U	0.033	U	0.028	U	0.026	U	0.027	U	0.026	U	0.031	U	0.028	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.026	U	0.03	U	0.027	U	0.025	U	0.033	U	0.033	U	0.028	U	0.026	U	0.027	U	0.026	U	0.031	U	0.028	U

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG	FC19378															
		Location	SB07031		SB07032		SB07033			SB07034								
		Sample Date	9/25/2024		9/25/2024		9/25/2024			9/26/2024								
		Sample ID	LORNG_SB07031_0-1_09252024	LORNG_SB07031_0-1_09252024FD	LORNG_SB07032_0-1_09252024	LORNG_SB07032_7-9_09252024	LORNG_SB07033_0-1_09252024	LORNG_SB07033_10-12_09252024	LORNG_SB07033_18-20_09252024	LORNG_SB07034_0-1_09262024	LORNG_SB07034_11-13_09262024	LORNG_SB07034_11-13_09262024FD	LORNG_SB07034_21-23_09262024					
		QC Code	N	FD	N	N	N	N	N	N	N	FD	N					
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0041	U	0.0044	U	0.0043	U	0.0042	U	0.0047	U	0.0046	U	0.0043	U	0.0041	U	0.0046	U	0.0048	U	0.0042	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.002	U	0.0022	U	0.0018	J	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.002	U	0.0022	U	0.0021	J	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.002	U	0.00055	J	0.0023	J	0.0019	J	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.002	U	0.0022	U	0.0016	J	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.002	U	0.0022	U	0.00096	J	0.0021	U	0.0024	U	0.0023	UJ	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0017	J	0.0023	J	0.0219		0.0099		0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0109		0.0125		0.136		0.0021	U	0.0051	J	0.0023	U	0.0021	U	0.0038	J	0.0023	U	0.0024	U	0.0021	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.002	U	0.0022	U	0.0011	J	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.002	U	0.0022	U	0.002	J	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	UJ	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.01	U	0.011	U	0.011	U	0.01	U	0.012	U	0.011	U	0.011	U	0.01	U	0.011	U	0.012	U	0.011	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.01	U	0.011	U	0.011	U	0.01	U	0.012	U	0.011	U	0.011	U	0.01	U	0.011	U	0.012	U	0.011	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0041	U	0.0044	U	0.0043	U	0.0042	U	0.0047	U	0.0046	U	0.0043	U	0.0041	U	0.0046	U	0.0048	U	0.0042	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0041	U	0.0044	U	0.0043	U	0.0042	U	0.0047	U	0.0046	U	0.0043	U	0.0041	U	0.0046	U	0.0048	U	0.0042	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0041	U	0.0044	U	0.0043	U	0.0042	U	0.0047	U	0.0046	U	0.0043	U	0.0041	U	0.0046	U	0.0048	U	0.0042	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.002	U	0.0022	U	0.0021	U	0.0021	U	0.0024	U	0.0023	U	0.0021	U	0.0021	U	0.0023	U	0.0024	U	0.0021	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0051	U	0.0055	U	0.0053	U	0.0052	U	0.0059	U	0.0057	U	0.0054	U	0.0051	U	0.0057	U	0.006	U	0.0053	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.025	U	0.027	U	0.027	U	0.026	U	0.03	U	0.029	U	0.027	U	0.026	U	0.029	U	0.03	U	0.027	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.025	U	0.027	U	0.027	U	0.026	U	0.03	U	0.029	U	0.027	U	0.026	U	0.029	U	0.03	U	0.027	U

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG	FC19378																	
		Location	SB07035			SB07036			SB12025	SB16019		SB16020	SB16021							
		Sample Date	9/25/2024			9/30/2024			10/1/2024	9/24/2024		9/25/2024	9/26/2024							
		Sample ID	LORNG_SB07035_0-1_09252024		LORNG_SB07035_6-8_09252024	LORNG_SB07035_10-12_09252024	LORNG_SB07036_0-2_09302024	LORNG_SB07036_7-9_09302024	LORNG_SB07036_13-15_09302024	LORNG_SB12025_7-9_10012024	LORNG_SB16019_0-1_09242024	LORNG_SB16019_0-1_09242024FD	LORNG_SB16020_0-1_09252024	LORNG_SB16021_0-1_09262024	LORNG_SB16021_3-5_09262024	LORNG_S 1_09					
		QC Code	N		N	N	N	N	N	N	N	FD	N	N	N						
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0046	U	0.0047	U	0.0047	U	0.0049	U	0.0046	U	0.0045	U	0.0045	U	0.0045	U	0.0047	U	0.0046	U	0.0051	U	0.0048	U	0.0045
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0007	J	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00066	J	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorononanoic acid (PFNA)	MG/KG	0.00071	J	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0014	J	0.0011	J	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0091		0.0006	J	0.0023	U	0.0078		0.0023	U	0.0023	U	0.0023	U	0.0024	J	0.0024	J	0.0023	U	0.0025	U	0.0024	U	0.002
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	0.011	U	0.011	U	0.011	U	0.012	U	0.012	U	0.013	U	0.012	U	0.011
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	0.011	U	0.011	U	0.011	U	0.012	U	0.012	U	0.013	U	0.012	U	0.011
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0046	U	0.0047	U	0.0047	U	0.0049	U	0.0046	U	0.0045	U	0.0045	U	0.0045	U	0.0047	U	0.0046	U	0.0051	U	0.0048	U	0.0045
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0046	U	0.0047	U	0.0047	U	0.0049	U	0.0046	U	0.0045	U	0.0045	U	0.0045	U	0.0047	U	0.0046	U	0.0051	U	0.0048	U	0.0045
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0046	U	0.0047	U	0.0047	U	0.0049	U	0.0046	U	0.0045	U	0.0045	U	0.0045	U	0.0047	U	0.0046	U	0.0051	U	0.0048	U	0.0045
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0023	U	0.0023	U	0.0023	U	0.0023	U	0.0024	U	0.0023	U	0.0025	U	0.0024	U	0.0022
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0058	U	0.0059	U	0.0059	U	0.0062	U	0.0058	U	0.0057	U	0.0057	U	0.0057	U	0.0059	U	0.0058	U	0.0064	U	0.006	U	0.0056
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.029	U	0.029	U	0.029	U	0.031	U	0.029	U	0.028	U	0.028	U	0.028	U	0.03	U	0.029	U	0.032	U	0.03	U	0.028
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.029	U	0.029	U	0.029	U	0.031	U	0.029	U	0.028	U	0.028	U	0.028	U	0.03	U	0.029	U	0.032	U	0.03	U	0.028

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19378																			
		Location		SB18054		SB18055		SB18056						SB18057		SB20017							
		Sample Date		9/26/2024		9/26/2024		9/26/2024						9/26/2024		9/27/2024							
		Sample ID		SB18054_0-262024	LORNG_SB18054_0-1_09262024FD	LORNG_SB18055_0-1_09262024		LORNG_SB18056_0-1_09262024		LORNG_SB18056_6-8_09262024		LORNG_SB18056_13-15_09262024		LORNG_SB18056_13-15_09262024FD		LORNG_SB18057_0-1_09262024		LORNG_SB20017_0-1_09272024		LORNG_SB20017_7-9_09272024		LORNG_SB20017_13-15_09272024	
		QC Code		N	FD	N		N		N		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	U	0.0047 U	0.0046 U		0.0052 U		0.0048 U		0.0045 U		0.0045 U		0.0046 U		0.005 U		0.0047 U		0.005 U	
		Perfluoropentanoic acid (PFPeA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorohexanoic acid (PFHxA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorooctanoic acid (PFOA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorononanoic acid (PFNA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorodecanoic acid (PFDA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorododecanoic acid (PFDoA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	U	0.0024 U	0.0023 U		0.0012 J		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	J	0.0026 J	0.0049 J		0.0425		0.0024 U		0.0023 U		0.0023 U		0.0059 J+		0.0025 U		0.0024 U		0.0025 U	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	U	0.0024 U	0.0023 U		0.0014 J		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	U	0.012 U	0.012 U		0.013 U		0.012 U		0.011 U		0.011 U		0.011 U		0.013 U		0.012 U		0.013 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	U	0.012 U	0.012 U		0.013 U		0.012 U		0.011 U		0.011 U		0.011 U		0.013 U		0.012 U		0.013 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	U	0.0047 U	0.0046 U		0.0052 U		0.0048 U		0.0045 U		0.0045 U		0.0046 U		0.005 U		0.0047 U		0.005 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	U	0.0047 U	0.0046 U		0.0052 U		0.0048 U		0.0045 U		0.0045 U		0.0046 U		0.005 U		0.0047 U		0.005 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	U	0.0047 U	0.0046 U		0.0052 U		0.0048 U		0.0045 U		0.0045 U		0.0046 U		0.005 U		0.0047 U		0.005 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	U	0.0024 U	0.0023 U		0.0026 U		0.0024 U		0.0023 U		0.0023 U		0.0023 U		0.0025 U		0.0024 U		0.0025 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	U	0.0059 U	0.0058 U		0.0065 U		0.006 U		0.0057 U		0.0056 U		0.0057 U		0.0063 U		0.0059 U		0.0063 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	U	0.03 U	0.029 U		0.033 U		0.03 U		0.028 U		0.028 U		0.029 U		0.031 U		0.03 U		0.031 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	U	0.03 U	0.029 U		0.033 U		0.03 U		0.028 U		0.028 U		0.029 U		0.031 U		0.03 U		0.031 U	

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19378								
			Location	SB20018								
			Sample Date	9/27/2024								
			Sample ID	LORNG_SB20018_0-1_09272024		LORNG_SB20018_7-9_09272024		LORNG_SB20018_7-9_09272024FD		LORNG_SB20018_13-15_09272024		
			QC Code	N		N		FD		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0045	U	0.0042	U	0.0045	U	0.0045	U	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorononanoic acid (PFNA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00096	J	0.0021	U	0.0023	U	0.0023	U	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0025	J	0.0021	U	0.00056	J	0.0023	U	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.011	U	0.011	U	0.011	U	0.011	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.011	U	0.011	U	0.011	U	0.011	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0045	U	0.0042	U	0.0045	U	0.0045	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0045	U	0.0042	U	0.0045	U	0.0045	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0045	U	0.0042	U	0.0045	U	0.0045	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0023	U	0.0021	U	0.0023	U	0.0023	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0057	U	0.0053	U	0.0056	U	0.0057	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.028	U	0.026	U	0.028	U	0.028	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.028	U	0.026	U	0.028	U	0.028	U	

Prepared by: AKN
Date: 2/13/25
Checked by:TC for EDS Validation company
Date:2/14/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19378	E1633DR	T	FC19378-14	LORNG_EB102_09262024	Perfluorohexanoic acid (PFHxA)	1.3	J	1.3	J	IAG	NG/L
			FC19378-57	LORNG_SB01045_0-1_09302024	Perfluorooctanoic acid (PFOA)	0.0019	J	0.0019	J	EBG	MG/KG
			FC19378-58	LORNG_SB01045_0-1_09302024FD	Perfluorooctanoic acid (PFOA)	0.0013	J	0.0013	J	EBG	MG/KG
			FC19378-15	LORNG_SB01046_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0015	J	0.0015	J	EBG	MG/KG
			FC19378-47	LORNG_SB06023_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0042	J	0.0042	J	EBG	MG/KG
			FC19378-32	LORNG_SB06024_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0029	J	0.0029	J	EBG	MG/KG
			FC19378-4	LORNG_SB06025_0-1_09252024	Perfluorooctanesulfonic acid (PFOS)	0.0063	J	0.0063	J	EBL	MG/KG
			FC19378-16	LORNG_SB06026_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.002	J	0.002	J	EBG	MG/KG
			FC19378-5	LORNG_SB07030_0-1_09252024	Perfluorohexanoic acid (PFHxA)	0.0014	J	0.0014	J	IAG	MG/KG
					Perfluorooctanoic acid (PFOA)	0.0009	J	0.0009	J	EBL	MG/KG
					Perfluorononanesulfonic acid (PFNS)	0.001	J	0.001	J	IAG	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0037	J	0.0037	J	IAG	MG/KG
			FC19378-6	LORNG_SB07030_15-17_09252024	Perfluorohexanoic acid (PFHxA)	0.00059	J	0.00059	J	IAG	MG/KG
					Perfluorooctanoic acid (PFOA)	0.0014	J	0.0014	J	EBL	MG/KG
			FC19378-34	LORNG_SB07030_7-9_09252024	Perfluorooctanesulfonic acid (PFOS)	0.0026	J	0.0026	J	EBL	MG/KG
			FC19378-36	LORNG_SB07031_0-1_09252024FD	Perfluorooctanoic acid (PFOA)	0.00055	J	0.00055	J	EBL	MG/KG
			FC19378-7	LORNG_SB07032_0-1_09252024	Perfluorooctanoic acid (PFOA)	0.0023	J	0.0023	J	EBL	MG/KG
			FC19378-8	LORNG_SB07032_7-9_09252024	Perfluorooctanoic acid (PFOA)	0.0019	J	0.0019	J	EBL	MG/KG
			FC19378-9	LORNG_SB07033_0-1_09252024	Perfluorooctanesulfonic acid (PFOS)	0.0051	J	0.0051	J	EBL	MG/KG
			FC19378-18	LORNG_SB07033_10-12_09252024	Perfluorodecanoic acid (PFDA)	0.0023	U	0.0023	UJ	CVHL	MG/KG
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0023	U	0.0023	UJ	IVD	MG/KG
			FC19378-37	LORNG_SB07034_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0038	J	0.0038	J	EBG	MG/KG
			FC19378-10	LORNG_SB07035_0-1_09252024	Perfluorooctanoic acid (PFOA)	0.00066	J	0.00066	J	EBL	MG/KG
			FC19378-11	LORNG_SB07035_6-8_09252024	Perfluorooctanesulfonic acid (PFOS)	0.0006	J	0.0006	J	EBL	MG/KG
			FC19378-21	LORNG_SB18054_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.002	J	0.002	J	EBG	MG/KG
			FC19378-50	LORNG_SB18054_0-1_09262024FD	Perfluorooctanesulfonic acid (PFOS)	0.0026	J	0.0026	J	EBG	MG/KG
			FC19378-22	LORNG_SB18055_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0049	J	0.0049	J	EBG	MG/KG
			FC19378-53	LORNG_SB18057_0-1_09262024	Perfluorooctanesulfonic acid (PFOS)	0.0059	=	0.0059	J+	EBG	MG/KG

Prepared by:AKN
Date:2/13/25
Checked by:TC
Date:2/14/25

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19378	LORNG_SB01045_0-1_09302024	LORNG_SB01045_0-1_09302024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0063	U	0.0063	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0019	J	0.0013	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0044	J	0.0047	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0262		0.0294		12	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0031	U	0.0031	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0078	U	0.0079	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0078	U	0.0079	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0078	U	0.0079	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0031	U	0.0031	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0031	U	0.0031	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0031	U	0.0031	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0031	U	0.0031	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0031	U	0.0031	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.016	U	0.016	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.016	U	0.016	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0063	U	0.0063	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0063	U	0.0063	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0031	U	0.0031	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0063	U	0.0063	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0078	U	0.0079	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0078	U	0.0079	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0031	U	0.0031	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0078	U	0.0079	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.039	U	0.039	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.039	U	0.039	U	NC	
FC19378	LORNG_SB05040_0-1_09242024	LORNG_SB05040_0-1_09242024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.005	U	0.0054	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0022	J	0.0027	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0025	U	0.0027	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0062	U	0.0067	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0062	U	0.0067	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0062	U	0.0067	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0025	U	0.0027	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0025	U	0.0027	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0025	U	0.0027	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0025	U	0.0027	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0025	U	0.0027	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.012	U	0.013	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.012	U	0.013	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.005	U	0.0054	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.005	U	0.0054	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0025	U	0.0027	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.005	U	0.0054	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0062	U	0.0067	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0062	U	0.0067	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0025	U	0.0027	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0062	U	0.0067	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.031	U	0.033	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.031	U	0.033	U	NC	
FC19378	LORNG_SB06022_10-12_09262024	LORNG_SB06022_10-12_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0042	U	0.0043	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0021	U	0.0022	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0053	U	0.0054	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0053	U	0.0054	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0053	U	0.0054	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0021	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0021	U	0.0022	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0021	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0021	U	0.0022	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0021	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0042	U	0.0043	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0042	U	0.0043	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0021	U	0.0022	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0042	U	0.0043	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0053	U	0.0054	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0053	U	0.0054	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0021	U	0.0022	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0053	U	0.0054	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.026	U	0.027	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.026	U	0.027	U	NC	
FC19378	LORNG_SB07031_0-1_09252024	LORNG_SB07031_0-1_09252024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0041	U	0.0044	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.002	U	0.00055	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0017	J	0.0023	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0109		0.0125		14	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.002	U	0.0022	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0051	U	0.0055	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0051	U	0.0055	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0051	U	0.0055	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.002	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.002	U	0.0022	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.002	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.002	U	0.0022	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.002	U	0.0022	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.01	U	0.011	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.01	U	0.011	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0041	U	0.0044	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0041	U	0.0044	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.002	U	0.0022	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.002	U	0.0022	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0041	U	0.0044	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0051	U	0.0055	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0051	U	0.0055	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.002	U	0.0022	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0051	U	0.0055	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.025	U	0.027	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.025	U	0.027	U	NC	
FC19378	LORNG_SB07034_11-13_09262024	LORNG_SB07034_11-13_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0046	U	0.0048	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0023	U	0.0024	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0057	U	0.006	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0057	U	0.006	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0057	U	0.006	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0046	U	0.0048	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0046	U	0.0048	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0046	U	0.0048	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0057	U	0.006	U	NC	

Table 4 - Field Duplicate RPD Summary

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Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0057	U	0.006	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0023	U	0.0024	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0057	U	0.006	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.029	U	0.03	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.029	U	0.03	U	NC	
FC19378	LORNG_SB16019_0-1_09242024	LORNG_SB16019_0-1_09242024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0045	U	0.0047	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0014	J	0.0011	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0024	J	0.0024	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0023	U	0.0024	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0057	U	0.0059	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0057	U	0.0059	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0057	U	0.0059	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0045	U	0.0047	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0045	U	0.0047	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0023	U	0.0024	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0045	U	0.0047	U	NC	

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Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0057	U	0.0059	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0057	U	0.0059	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0023	U	0.0024	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0057	U	0.0059	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.028	U	0.03	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.028	U	0.03	U	NC	
FC19378	LORNG_SB18054_0-1_09262024	LORNG_SB18054_0-1_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0045	U	0.0047	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.002	J	0.0026	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0022	U	0.0024	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0056	U	0.0059	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0056	U	0.0059	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0056	U	0.0059	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0022	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0022	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0022	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0022	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0022	U	0.0024	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.012	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0045	U	0.0047	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0045	U	0.0047	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0022	U	0.0024	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0022	U	0.0024	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0045	U	0.0047	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0056	U	0.0059	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0056	U	0.0059	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0022	U	0.0024	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0056	U	0.0059	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.028	U	0.03	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.028	U	0.03	U	NC	
FC19378	LORNG_SB18056_13-15_09262024	LORNG_SB18056_13-15_09262024FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0045	U	0.0045	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0023	U	0.0023	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0023	U	0.0023	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0057	U	0.0056	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0057	U	0.0056	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0057	U	0.0056	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0045	U	0.0045	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0045	U	0.0045	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0023	U	0.0023	U	NC	

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Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0023	U	0.0023	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0045	U	0.0045	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0057	U	0.0056	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0057	U	0.0056	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0023	U	0.0023	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0057	U	0.0056	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.028	U	0.028	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.028	U	0.028	U	NC	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.0042	U	0.0045	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0021	U	0.00056	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0021	U	0.0023	U	NC	
FC19378	LORNG_SB20018_7-9_09272024	LORNG_SB20018_7-9_09272024FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0053	U	0.0056	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0053	U	0.0056	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0053	U	0.0056	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0021	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0021	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0021	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0021	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0021	U	0.0023	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.011	U	0.011	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0042	U	0.0045	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0042	U	0.0045	U	NC	

Table 4 - Field Duplicate RPD Summary

Data Validation and Usability Report
Loring PFAS Remedial Investigation
Former Loring Air Force Base, Limestone, Maine
Fall 2024 Soil Program - SDG FC19378

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0021	U	0.0023	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0042	U	0.0045	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0053	U	0.0056	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0053	U	0.0056	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0021	U	0.0023	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0053	U	0.0056	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.026	U	0.028	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.026	U	0.028	U	NC	

DATA VALIDATION REPORT

Loring AFB

SDG: FC19573

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 10, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19573
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/08/2024; 10/10/2024 – 10/11/2024; and 10/14/2024
Number of Samples: 46
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_8711-MW07_10112024	FC19573-1	groundwater	S2BVM
LORNG_BW12005_10112024	FC19573-2	groundwater	S2BVM
LORNG_EB024_10102024	FC19573-3	equipment blank	S2BVM
LORNG_JBW8003B_10112024	FC19573-4	groundwater	S2BVM
LORNG_MMW8015_10112024	FC19573-5	groundwater	S2BVM
LORNG_OW05003_10112024	FC19573-6	groundwater	S2BVM
LORNG_BW05009_10102024	FC19573-7	groundwater	S2BVM
LORNG_BW13003_10102024	FC19573-8	groundwater	S2BVM
LORNG_BW18010_10102024	FC19573-9	groundwater	S2BVM
LORNG_CBW02_10102024	FC19573-10	groundwater	S2BVM
LORNG_JBW7326A_10082024SPLIT	FC19573-11	groundwater	S2BVM
LORNG_JBW7327_158_10102024	FC19573-12	groundwater	S2BVM
LORNG_JBW7327_45_10102024	FC19573-13	groundwater	S2BVM
LORNG_JBW7327_45_10102024FD	FC19573-14	groundwater	S2BVM
LORNG_AA07MW-02_10102024	FC19573-15	groundwater	S2BVM
LORNG_AA07MW-02_10102024FD	FC19573-16	groundwater	S2BVM
LORNG_BW13002_10102024	FC19573-17	groundwater	S2BVM
LORNG_EB021_10102024	FC19573-18	equipment blank	S2BVM
LORNG_EB022_10102024	FC19573-19	equipment blank	S2BVM
LORNG_EB023_10102024	FC19573-20	equipment blank	S2BVM
LORNG_FMW3410_10102024	FC19573-21	groundwater	S2BVM
LORNG_FMW3410_10102024FD	FC19573-22	groundwater	S2BVM
LORNG_AA11MW-01_10112024	FC19573-23	groundwater	S2BVM
LORNG_AA11MW-02_10112024	FC19573-24	groundwater	S2BVM
LORNG_AA20MW-01_10112024	FC19573-25	groundwater	S2BVM
LORNG_BW05012D_10142024	FC19573-26	groundwater	S2BVM
LORNG_BW05012I_10142024	FC19573-27	groundwater	S2BVM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW05012S_10142024	FC19573-28	groundwater	S2BVM
LORNG_BW06005_10112024	FC19573-29	groundwater	S2BVM
LORNG_BW07003_10142024	FC19573-30	groundwater	S2BVM
LORNG_JMW0683_10102024	FC19573-31	groundwater	S2BVM
LORNG_JMW7916_10102024	FC19573-32	groundwater	S2BVM
LORNG_JPZ0342_10102024	FC19573-33	groundwater	S2BVM
LORNG_UNK-TC01_10102024	FC19573-34	groundwater	S2BVM
LORNG_JBW7327_265_10102024	FC19573-35	groundwater	S2BVM
LORNG_MMW0004_10102024	FC19573-36	groundwater	S2BVM
LORNG_MMW0020_150_10102024	FC19573-37	groundwater	S2BVM
LORNG_MMW0020_60_10102024	FC19573-38	groundwater	S2BVM
LORNG_OW05003_10112024FD	FC19573-39	groundwater	S2BVM
LORNG_OW24001_10102024	FC19573-40	groundwater	S2BVM
LORNG_USMW025_10112024	FC19573-41	groundwater	S2BVM
LORNG_USMW025_10112024FD	FC19573-42	groundwater	S2BVM
LORNG_EB025_10142024	FC19573-43	equipment blank	S2BVM
LORNG_JMW0961_10112024	FC19573-44	groundwater	S2BVM
LORNG_JPZ7602_10112024	FC19573-45	groundwater	S2BVM
LORNG_OW07003_10112024	FC19573-46	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion with the following exceptions.

Samples LORNG_BW05012D_10142024, LORNG_BW05012I_10142024, and LORNG_MMW0004_10102024 were re-extracted outside of the required holding time. The results reported from the re-extraction have been qualified "UJ" on this basis.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion with the following exceptions.

The observed %R for PFPeS was outside of acceptance criteria for an ICV associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "J" or "UJ" as appropriate on this basis.

LORNG_EB023_10102024	*LORNG_BW06005_10112024*
LORNG_FMW3410_10102024FD	*LORNG_JMW7916_10102024*
LORNG_FMW3410_10102024	*LORNG_AA20MW-01_10112024*
LORNG_AA11MW-02_10112024	*LORNG_MMW0004_10102024*
LORNG_BW07003_10142024	*LORNG_JPZ0342_10102024*
LORNG_MMW0020_60_10102024	*LORNG_UNK-TC01_10102024*
LORNG_MMW0020_150_10102024	*LORNG_JBW7327_265_10102024*
LORNG_AA11MW-01_10112024	*LORNG_BW06005_10112024*

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The observed %Rs for PFDA were outside of acceptance criteria for the ISCs associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "UJ" on this basis.

LORNG_EB023_10102024	*LORNG_JMW7916_10102024*
LORNG_FMW3410_10102024FD	*LORNG_JPZ0342_10102024*
LORNG_FMW3410_10102024	*LORNG_UNK-TC01_10102024*
LORNG_AA11MW-02_10112024	*LORNG_JBW7327_265_10102024*
LORNG_MMW0020_60_10102024	*LORNG_BW05012S_10142024*
LORNG_MMW0020_150_10102024	*LORNG_BW07003_10142024*
LORNG_AA11MW-01_10112024	*LORNG_JMW0683_10102024*
LORNG_BW06005_10112024	*LORNG_AA20MW-01_10112024*
LORNG_MMW0004_10102024	*LORNG_BW05012I_10142024*
LORNG_BW05012D_10142024	

The observed %Rs for 3:3FTCA and PFMPA were outside of acceptance criteria for the ISC associated with samples LORNG_BW07003_10142024, LORNG_JMW0683_101020 24, and LORNG_AA20MW-01_10112024. The results reported for the impacted analytes in the associated samples have been qualified "UJ" on this basis.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB021_10102024 was submitted as an equipment blank in association with samples LORNG_UNK-TC01_10102024, LORNG_BW18010_10102024, and LORNG_MMW0004_10102024. No problems were found for this criterion.

Sample LORNG_EB022_10102024 was submitted as an equipment blank in association with the samples listed in the table below. No problems were found for this criterion.

LORNG_JBW7327_45_10102024	*LORNG_JBW7327_158_10102024*
LORNG_JBW7327_45_10102024FD	*LORNG_JBW7327_265_10102024*

Sample LORNG_EB023_10102024 was submitted as an equipment blank in association with samples LORNG_BW13003_10102024 and LORNG_BW13002_10102024. No problems were found for this criterion.

Sample LORNG_EB024_10102024 was submitted as an equipment blank in association with the samples listed in the table below. No problems were found for this criterion.

LORNG_CBW02_10102024	*LORNG_FMW3410_10102024FD*
LORNG_FMW3410_10102024	*LORNG_OW24001_10102024*

Sample LORNG_EB025_10142024 was submitted as an equipment blank in association with samples LORNG_BW05012I_10142024 and LORNG_BW05012D_10142024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring result qualification were found for this criterion with the following exceptions.

The observed isotope dilution standard recoveries for 13C5-PFHxA and 13C3-HFPO-DA were less than the lowest acceptance limit during the analysis of sample LORNG_BW05012D_10142024. The results reported for the associated target analytes in the impacted sample have been qualified "UJ" on this basis.

The observed isotope dilution standard recoveries for 13C5-PFHxA, 13C3-PFBS, and 13C3-HFPO-DA were less than the lowest acceptance limit during the analysis of sample LORNG_BW05012I_10142024. The results reported for the associated target analytes in the impacted sample have been qualified "UJ" on this basis.

The observed isotope dilution standard recovery for 13C5-PFPeA was less than the lowest acceptance during the analysis of sample LORNG_MMW0004_10102024. The results reported for the associated target analytes in the impacted sample have been qualified "UJ" on this basis.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exception.

The transition mass ratios were outside the established ratio limits for PFNS during the analyses of the samples listed in the table below indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

LORNG_8711-MW07_10112024	*LORNG_MMW8015_10112024*
LORNG_BW12005_10112024	*LORNG_AA11MW-01_10112024*
LORNG_JBW8003B_10112024	*LORNG_AA20MW-01_10112024*

The transition mass ratio was outside the established ratio limits for PFHxA during the analysis of sample LORNG_BW13002_10102024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratio was outside the established ratio limits for PFDoDA during the analysis of sample LORNG_MMW0004_10102024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratios were outside the established ratio limits for FOSA during the analyses of samples LORNG_BW07003_10142024 and LORNG_OW07003_10112024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_FMW3410_10102024 was submitted for MS evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy indicators were acceptable with the following exception. The observed recovery for PFDA was less than the lowest acceptable limit. The result reported for the impacted analyte in the parent sample has been qualified "UJ" on this basis.

Sample LORNG_JBW8003B_10112024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_FMW3410_10102024FD was submitted for matrix duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_AA07MW-02_10102024 and LORNG_AA07MW-02_10102024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_FMW3410_10102024 and LORNG_FMW3410_10102024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_JBW7327_45_10102024 and LORNG_JBW7327_45_10102024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_OW05003_10112024 and LORNG_OW05003_10112024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_USMW025_10112024 and LORNG_USMW025_10112024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion with the following exceptions. The observed recoveries for FPDA were less than the lowest acceptance limit in the LCS and low level LCS (LLLCS) associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "UJ" on this basis.

LORNG_EB023_10102024	*LORNG_JMW7916_10102024*
LORNG_FMW3410_10102024FD	*LORNG_AA20MW-01_10112024*
LORNG_FMW3410_10102024	*LORNG_MMW0004_10102024*
LORNG_AA11MW-02_10112024	*LORNG_JPZ0342_10102024*
LORNG_BW07003_10142024	*LORNG_UNK-TC01_10102024*
LORNG_JMW0683_10102024	*LORNG_JBW7327_265_10102024*
LORNG_MMW0020_60_10102024	*LORNG_BW05012D_10142024*
LORNG_MMW0020_150_10102024	*LORNG_BW05012I_10142024*
LORNG_AA11MW-01_10112024	*LORNG_BW05012S_10142024*
LORNG_BW06005_10112024	

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results and/or bring analyte concentrations into the instrument's linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

Please note sample LORNG_JBW7326A_10082024SPLIT was submitted for split sample analyses. The split sample results are located in SDG C4V9358. Adequate precision was demonstrated.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling			x
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference			x
Instrument Sensitivity Check			x
Extracted Internal Standards			x
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate			x
Laboratory Control Sample			x
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	**The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.**
J	**The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.**
J+	**The result is an estimated quantity, but the result may be biased high.**
J-	**The result is an estimated quantity, but the result may be biased low.**
UJ	**The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.**
R	**The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.**

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_AA07MW-02_10102024	LORNG_AA07MW-02_10102024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA	18.4	20	8.3		
53FTCA			0.0		
62FTSA	983	1070	8.5		
73FTCA			0.0		
82FTSA	90.9	99.7	9.2		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	47.9	48	0.2		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	95.6	95.9	0.3		
PFBSA	85.6	88.2	3.0		
PFDA	1.4	1.4	0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	160	159	0.6		
PFHPSA	57.5	55.8	3.0		
PFHXA	428	422	1.4		
PFHXSA	1410	1330	5.8		
PFMBA			0.0		
PFMPA			0.0		
PFNA	19.2	20.6	7.0		
PFNSA	0		0.0		
PFOA	402	405	0.7		
PFOS	1620	1560	3.8		
PFPA	399	408	2.2		
PFPESA	121	125	3.3		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_FMW3410_10102024	LORNG_FMW3410_10102024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	16.3	16.1	1.2		
PFBSA	3.2	3.2	0.0		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	28.1	27.4	2.5		
PFHPSA	1.6	1.4	13.3		
PFHXA	35.3	34.9	1.1		
PFHXSA	50.8	49.6	2.4		
PFMBA			0.0		
PFMPA			0.0		
PFNA	2.3	2.4	4.3		
PFNSA			0.0		
PFOA	16.9	17.1	1.2		
PFOS	65.8	60	9.2		
PFPA	51.9	50.9	1.9		
PFPESA	5	5.6	11.3		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_JBW7327_45_10102024	LORNG_JBW7327_45_10102024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA	487	490	0.6		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	0.95	0.97	2.1		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA			0.0		
PFBSA	1.5	1.4	6.9		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	4.5	4.5	0.0		
PFHPSA			0.0		
PFHXA	19.3	19.4	0.5		
PFHXSA	13.5	14.4	6.5		
PFMBA			0.0		
PFMPA			0.0		
PFNA			0.0		
PFNSA			0.0		
PFOA	8.7	8.1	7.1		
PFOS	5.3	6.1	14.0		
PFPA	12.2	11.7	4.2		
PFPESA	1.2	1.2	0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_OW05003_10112024	LORNG_OW05003_10112024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA	0	3.5	200.0	19	ok
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	12.3	15.5	23.0		
PFBSA	8	9.6	18.2		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	17.7	21.1	17.5		
PFHPSA	8.6	9.8	13.0		
PFHXA	19.7	23.9	19.3		
PFHXSA	150	181	18.7		
PFMBA			0.0		
PFMPA			0.0		
PFNA	6.8	7.7	12.4		
PFNSA			0.0		
PFOA	19.5	23.7	19.4		
PFOS	452	548	19.2		
PFPA	33.3	38.7	15.0		
PFPESA	13.9	16.8	18.9		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_USMW025_10112024	LORNG_USMW025_10112024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	3.8	3.7	2.7		
PFBSA	0.98	1.3	28.1		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	2.3	2.2	4.4		
PFHPSA			0.0		
PFHXA	4.2	3.8	10.0		
PFHXSA	24.4	24.1	1.2		
PFMBA			0.0		
PFMPA			0.0		
PFNA			0.0		
PFNSA			0.0		
PFOA	3.7	3.8	2.7		
PFOS	18.1	18.9	4.3		
PFPA	3.2	3.4	6.1		
PFPESA	1.3	1.3	0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 02/03/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19573

LAB: SGS Orlando

Samples Collected: 10/08/2024; 10/10/2024 – 10/11/2024; and 10/14/2024

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SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/16 at <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

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Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/08/2024; 10/10/2024 – 10/11/2024; and 10/14/2024
Initial Extracted 10/31/2024
Analyzed 11/21/2024; 11/22/2024 ok

Re-extractions	reanalyses	
FC19573-26: 11/26/2024	11/28/2024	extracted past hold time (17 days past)
LORNG_BW05012D_10142024	flag reported analytes UJ	
FC19573-27: 11/26/2024	11/28/2024	extracted past hold time (17 days past)
LORNG_BW05012I_10142024	flag reported analytes UJ	
FC19573-36: 11/26/2024	11/28/2024	extracted past hold time (21 days past)
LORNG_MMW0004_10102024	flag reported analytes UJ	

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%

- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_BW05012D_10142024 FC19573-26
13C4-PFBA <10% run 1 and run3 reported from run 2; no action
13C5-PFPeA <10% run 1 and run3 reported from run 2; no action
13C5-PFHxA ↓ run 1 PFHxA flag UJ
13C2-4:2FTS ↑ run 2 reported from run 1; no action
13C3-HFPO-DA ↓ run 1 and run 3 associated analytes reported from run 1 flag UJ
HFPO-DA
ADONA
NFDHA
9Cl-PF3ONS
11Cl-PF3OUdS
PFEESA
5:3-FTCA
7:3-FTCA

LORNG_BW05012I_10142024 FC19573-27
13C4-PFBA <10% run 1 and run3 reported from run 2; no action
13C5-PFPeA <10% run 1 and run3 reported from run 2; no action
13C5-PFHxA ↓ run 1 and run3 PFHxA flag UJ
13C3-PFBS ↓ run 1 and run3 PFBS flag UJ
13C2-4:2FTS ↑ run 2; ↓ run3 reported from run 1; no action
13C3-HFPO-DA ↓ run 1 and run 3 associated analytes reported from run 1 flag UJ
NFDHA
PFEESA

5:3-FTCA
7:3-FTCA

LORNG_MMW0004_10102024 FC19573-36
13C4-PFBA <10% run 1 and run3 reported from run 2; no action
13C5-PFPeA ↓ run 1 and run3 PFPeA and PFMBA flag UJ

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6169-LLBS ok
OP6167-LLBS ok
OP6168-LLBS(7Q14175.D) associated with samples 20 - 38
PFDA ↓ flag UJ based on professional judgment per EDS policy
OP6168-LLBS(7Q14223.D) ok

OP6169-BS ok
OP6167-BS ok
OP6168-BS (7Q14174.D) associated with samples 20 - 38
PFDA ↓ flag UJ based on professional judgment per EDS policy

LORNG_EB023_10102024
LORNG_FMW3410_10102024FD
LORNG_FMW3410_10102024
LORNG_AA11MW-02_10112024
LORNG_BW07003_10142024
LORNG_JMW0683_10102024
LORNG_MMW0020_60_10102024

LORNG_MMW0020_150_10102024
LORNG_AA11MW-01_10112024
LORNG_BW06005_10112024
LORNG_JMW7916_10102024
LORNG_AA20MW-01_10112024
LORNG_MMW0004_10102024
LORNG_JPZ0342_10102024
LORNG_UNK-TC01_10102024
LORNG_JBW7327_265_10102024
LORNG_BW05012D_10142024
LORNG_BW05012I_10142024
LORNG_BW05012S_10142024

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_FMW3410_10102024		**FC19573-21**		**MS only**
PFDA ↓	**flag UJ**			

LORNG_JBW8003B_10112024		**FC19573-4**		**MS/MSD**
Analyte	**MS**	**MSD**	**RPD**	**flag**
PFHxA	**ok**	**↓**	**ok**	**inconclusive; no action**
PFHxSA	**ok; 4X rule**			
PFOS	**ok; 4X rule**			

Matrix Duplicate:

LORNG_FMW3410_10102024FD	**FC19573-22**	
ok		

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs

LORNG_EB021_10102024
Associated with
LORNG_UNK-TC01_10102024
LORNG_BW18010_10102024
LORNG_MMW0004_10102024
All ND

LORNG_EB022_10102024
Associated with
LORNG_JBW7327_45_10102024

LORNG_JBW7327_45_10102024FD
LORNG_JBW7327_158_10102024
LORNG_JBW7327_265_10102024
All ND

LORNG_EB023_10102024
Associated with
LORNG_BW13003_10102024
LORNG_BW13002_10102024
All ND

LORNG_EB024_10102024
Associated with
LORNG_CBW02_10102024
LORNG_FMW3410_10102024
LORNG_FMW3410_10102024FD
LORNG_OW24001_10102024
All ND

LORNG_EB025_10142024
Associated with
LORNG_BW05012I_10142024
LORNG_BW05012D_10142024
All ND

OP6169-MB all ND
OP6279-MB all ND
OP6168-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS3T

11/19/24 all %RSD <20%

S3T16-IBLK 3T1031.D 11/21/24 15:12 n/a Instrument Blank
S3T16-ICV16 3T1032.D 11/21/24 15:27 n/a Initial cal verification 4
S3T16-ICV16 3T1033.D 11/21/24 15:42 n/a Initial cal verification 20

S3T16-CC16 3T1034.D 11/21/24 15:57 n/a Continuing cal 4
S3T16-CC16 3T1035.D 11/21/24 16:13 n/a Continuing cal 1.0LL

Samples 1-5

S3T16-CC16 3T1046.D 11/21/24 18:58 n/a Continuing cal 4
S3T16-ICCB 3T1047.D 11/21/24 19:13 n/a Continuing Calibration Blank

Samples 6,7,9-15

S3T16-CC16 3T1058.D 11/21/24 21:58 n/a Continuing cal 4
S3T16-ICCB 3T1059.D 11/21/24 22:14 n/a Continuing Calibration Blank

Samples 16-19

S3T16-CC16 3T1064.D 11/21/24 23:29 n/a Continuing cal 4

S3T17-IBLK 3T1122.D 11/22/24 14:41 n/a Instrument Blank
S3T17-CC16 3T1124.D 11/22/24 15:11 n/a Continuing cal 1.0LL

S3T17-CC16 3T1146.D 11/22/24 20:42 n/a Continuing cal 4
S3T17-ICCB 3T1147.D 11/22/24 20:57 n/a Continuing Calibration Blank

Samples 2,4,5,7,8,15,16,17

S3T17-ECC16 3T1160.D 11/23/24 00:12 n/a Ending cal 4
S3T17-ICCB 3T1161.D 11/23/24 00:27 n/a Continuing Calibration Blank

Instrument GCMS7Q

11/21/24 all %RSD <20%

S7Q198-IBLK 7Q14137.D 11/21/24 18:03 n/a Instrument Blank
S7Q198-ICV198 7Q14138.D 11/21/24 18:17 n/a Initial cal verification 4
S7Q198-ICV198 7Q14139.D 11/21/24 18:31 n/a Initial cal verification 20
PFPeS out ↑ FLAG J/UJ
Reported for samples
LORNG_EB023_10102024
LORNG_FMW3410_10102024FD
LORNG_FMW3410_10102024
LORNG_AA11MW-02_10112024
LORNG_BW07003_10142024
LORNG_MMW0020_60_10102024
LORNG_MMW0020_150_10102024
LORNG_AA11MW-01_10112024
LORNG_BW06005_10112024
LORNG_JMW7916_10102024
LORNG_AA20MW-01_10112024
LORNG_MMW0004_10102024
LORNG_JPZ0342_10102024
LORNG_UNK-TC01_10102024
LORNG_JBW7327_265_10102024

LORNG_BW05012S_10142024

S7Q198-CC198 7Q14141.D 11/21/24 18:59 n/a Continuing cal 1.0LL
PFDA out ↑ FLAG UJ
Reported for samples
LORNG_EB023_10102024
LORNG_FMW3410_10102024FD
LORNG_FMW3410_10102024
LORNG_AA11MW-02_10112024
LORNG_MMW0020_60_10102024
LORNG_MMW0020_150_10102024
LORNG_AA11MW-01_10112024
LORNG_BW06005_10112024
LORNG_JMW7916_10102024
LORNG_JPZ0342_10102024
LORNG_UNK-TC01_10102024
LORNG_JBW7327_265_10102024
LORNG_BW05012S_10142024

S7Q198-CC198 7Q14172.D 11/22/24 02:12 n/a Continuing cal 4
S7Q198-ICCB 7Q14173.D 11/22/24 02:26 n/a Continuing Calibration Blank

Samples 20-24

S7Q198-CC198 7Q14184.D 11/22/24 05:00 n/a Continuing cal 4
S7Q198-ICCB 7Q14185.D 11/22/24 05:14 n/a Continuing Calibration Blank

Samples 25,27-30,32-34

S7Q198-CC198 7Q14196.D 11/22/24 07:48 n/a Continuing cal 4
S7Q198-ICCB 7Q14197.D 11/22/24 08:02 n/a Continuing Calibration Blank

Samples 35-38

S7Q198-ECC198 7Q14202.D 11/22/24 09:12 n/a Ending cal 4
S7Q198-ICCB 7Q14204.D 11/22/24 09:40 n/a Continuing Calibration Blank

S7Q199-IBLK 7Q14218.D 11/22/24 14:55 n/a Instrument Blank

11/22/24 all %RSD <20%

S7Q199-IBLK 7Q14218.D 11/22/24 14:55 n/a Instrument Blank
S7Q199-ICV199 7Q14219.D 11/22/24 15:09 n/a Initial cal verification 4
S7Q199-ICV199 7Q14220.D 11/22/24 15:23 n/a Initial cal verification 20
S7Q199-CC199 7Q14221.D 11/22/24 15:37 n/a Continuing cal 4
S7Q199-CC199 7Q14222.D 11/22/24 16:26 n/a Continuing cal 1.0LL
PFDA out ↑
LORNG_BW07003_10142024
LORNG_JMW0683_10102024
LORNG_AA20MW-01_10112024

LORNG_MMW0004_10102024
LORNG_BW05012D_10142024
LORNG_BW05012I_10142024

3:3FTCA out ↑
PFMPA out ↑
LORNG_BW07003_10142024
LORNG_JMW0683_10102024
LORNG_AA20MW-01_10112024

Samples 25,26,27,30,31,36

S7Q199-CC199 7Q14233.D 11/22/24 19:00 n/a Continuing cal 4

Instrument GCMS8Q

11/15/24 all %RSD <20%
S8Q203-IBLK 8Q14670.D 11/15/24 15:39 n/a Instrument Blank
4151-50-2 EtFOSA 0.0015 J ug/L all associated ND; no action
24448-09-7 MeFOSE 0.0045 J ug/L all associated ND; no action
S8Q203-ICV203 8Q14671.D 11/15/24 15:56 n/a Initial cal verification 4
S8Q203-ICV203 8Q14672.D 11/15/24 16:10 n/a Initial cal verification 20

S8Q206-CC203 8Q14947.D 11/20/24 15:10 n/a Continuing cal 1.0LL

S8Q206-CC203 8Q14985.D 11/20/24 23:55 n/a Continuing cal 4
S8Q206-ICCB 8Q14986.D 11/21/24 00:08 n/a Continuing Calibration Blank

Samples 39,41,42,43,44,45

S8Q206-CC203 8Q14997.D 11/21/24 02:40 n/a Continuing cal 4
S8Q206-ICCB 8Q14998.D 11/21/24 02:53 n/a Continuing Calibration Blank

Samples 46

S8Q206-CC203 8Q15009.D 11/21/24 05:25 n/a Continuing cal 4

S8Q207-IBLK 8Q15020.D 11/21/24 12:14 n/a Instrument Blank
4151-50-2 EtFOSA 0.0011 J ug/L all associated ND; no action
S8Q207-CC203 8Q15021.D 11/21/24 12:29 n/a Continuing cal 4
S8Q207-CC203 8Q15022.D 11/21/24 12:43 n/a Continuing cal 1.0LL

Samples 39

S8Q207-CC203 8Q15033.D 11/21/24 15:20 n/a Continuing cal 4
S8Q207-ICCB 8Q15034.D 11/21/24 15:34 n/a Continuing Calibration Blank

Samples 40

S8Q207-CC203 8Q15042.D 11/21/24 17:24 n/a Continuing cal 4
S8Q207-ICCB 8Q15043.D 11/21/24 17:37 n/a Continuing Calibration Blank

Samples 46

S8Q207-CC203 8Q15046.D 11/21/24 18:19 n/a Continuing cal 4

11/27/24 all %RSD <20%

S8Q212-IBLK 8Q15510.D 11/28/24 08:34 n/a Instrument Blank
Information not provided in data package; all results reported for the associated samples were ND; therefore, no follow up action was taken
S8Q212-CC211 8Q15511.D 11/28/24 08:48 n/a Continuing cal 4
S8Q212-CC211 8Q15512.D 11/28/24 09:02 n/a Continuing cal 1.0LL
S8Q212-CC211 8Q15512.D 11/28/24 09:02 n/a Continuing cal 1.0LL

S8Q212-CC211 8Q15523.D 11/28/24 11:33 n/a Continuing cal 4
S8Q212-ICCB 8Q15524.D 11/28/24 11:47 n/a Continuing Calibration Blank
Information not provided in data package; all results reported for the associated samples were ND; therefore, no follow up action was taken

Samples 26,27,36

S8Q212-CC211 8Q15535.D 11/28/24 14:18 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_8711-MW07_10112024	FC19573-1	PFNS
LORNG_BW12005_10112024	FC19573-2	PFNS
LORNG_JBW8003B_10112024	FC19573-4	PFNS
LORNG_MMW8015_10112024	FC19573-5	PFNS
LORNG_AA11MW-01_10112024	FC19573-23	PFNS
LORNG_AA20MW-01_10112024	FC19573-25	PFNS
LORNG_BW13002_10102024	FC19573-17	PFHxA
LORNG_MMW0004_10102024	FC19573-36	PFDoDA
LORNG_BW07003_10142024	FC19573-30	FOSA
LORNG_OW07003_10112024	FC19573-46	FOSA

Use IAG reason code

FC19573-10	PFPeA	did not flag; see below
FC19573-34	PFPeA	did not flag; see below

Instruments 3T and 8Q show secondary ions for PFBA and PFPeA while instrument 7Q does not

Per method 1633:

> The total response of all isomers (branched and linear) in the quantitative standards must be used to define the IAR. In samples, the total response should include only the branched isomer peaks that have been identified in either the quantitative or qualitative standard (see Section 7.3 regarding records of traceability of all standards). If standards (either quantitative or qualitative) are not available for purchase, only the linear isomer can be identified and quantitated in samples. The ratio requirement does not apply to PFBA, PFPeA, NMeFOSE, NEtFOSE, PFMPA, or PFMBA because secondary transitions (Q2) for these analytes are either not detectable or have inadequate S/N to be reliable for routine use in an ion ratio calculation.

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ
LORNG_AA07MW-02_10102024 and LORNG_AA07MW-02_10102024FD	all ok
LORNG_FMW3410_10102024 and LORNG_FMW3410_10102024FD	all ok
LORNG_JBW7327_45_10102024 and LORNG_JBW7327_45_10102024FD	all ok
LORNG_OW05003_10112024 and LORNG_OW05003_10112024FD	all ok
LORNG_USMW025_10112024 and LORNG_USMW025_10112024FD	all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19573																			
			Location	BW12005		BW13002		BW13003		BW18010		CBW02		FIELDQC								FMW3410	
			Sample Date	10/11/2024		10/10/2024		10/10/2024		10/10/2024		10/10/2024		10/10/2024						10/14/2024		10/10/2024	
			Sample ID	LORNG_BW12005_10112024		LORNG_BW13002_10102024		LORNG_BW13003_10102024		LORNG_BW18010_10102024		LORNG_CBW02_10102024		LORNG_EB021_10102024		LORNG_EB022_10102024		LORNG_EB023_10102024		LORNG_EB024_10102024		LORNG_EB025_10142024		LORNG_FMW3410_10102024	LORNG_FMW3410_10102024FD
			QC Code	N		N		N		N		N		EB		EB		EB		EB		EB		N	FD
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	45.8		3.9	U	7.1	J	4.1	U	4.8	J	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	16.3		16.1	
		Perfluoropentanoic acid (PFPeA)	NG/L	122		2.8	J	12.7		3.6	J	4.5	J	1.9	U	1.9	U	1.9	UJ	1.9	U	1.8	U	51.9	J	50.9	J
		Perfluorohexanoic acid (PFHxA)	NG/L	288		1.4	J	12.5		2.4	J	4.4	J	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	35.3		34.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	50.2		0.64	J	19		2	U	1.1	J	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	28.1		27.4	
		Perfluorooctanoic acid (PFOA)	NG/L	93.3		0.8	J	24.2		1	U	3.5	J	0.97	U	0.97	U	0.96	U	0.97	U	0.89	U	16.9		17.1	
		Perfluorononanoic acid (PFNA)	NG/L	2.1	J	1.9	U	5.1		2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2.3	J	2.4	J
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	UJ	1.9	U	1.8	U	2	UJ	1.9	UJ
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	121		1.9	U	3.4	J	2	U	0.75	J	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	3.2	J	3.2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	135		3.9	U	4.1	J	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	5	J	5.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	649		0.94	J	31.3		2	U	14.1		1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	50.8		49.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	81.9		1.9	U	1.2	J	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.6	J	1.4	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2490		1.4	J	55.4		2	U	10.5		1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	65.8		60	
		Perfluorononanesulfonic acid (PFNS)	NG/L	4.5	J	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	4.1	J	7.8	U	8	U	8.2	U	9.1	U	7.8	U	7.8	U	7.7	U	7.8	U	7.1	U	8.2	U	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	165		7.8	U	8	U	8.2	U	9.1	U	7.8	U	7.8	U	7.7	U	7.8	U	7.1	U	8.2	U	7.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	25		7.8	U	8	U	8.2	U	9.1	U	7.8	U	7.8	U	7.7	U	7.8	U	7.1	U	8.2	U	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	4.2		1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	19	U	20	U	20	U	23	U	19	U	19	U	19	U	19	U	18	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	19	U	20	U	20	U	23	U	19	U	19	U	19	U	19	U	18	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	3.9	U	4	U	4.1	U	4.5	U	3.9	U	3.9	U	3.8	U	3.9	U	3.6	U	4.1	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	1.9	U	2	U	2	U	2.3	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	9.7	U	10	U	10	U	11	U	9.7	U	9.7	U	9.6	U	9.7	U	8.9	U	10	U	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	19	U	20	U	20	U	23	U	19	U	19	U	19	U	19	U	18	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	19	U	20	U	20	U	23	U	19	U	19	U	19	U	19	U	18	U	20	U	19	U

Prepared by: AKN
Date: 2/26/25
Checked by:TC for EDS Validation Contractor
Date:2/26/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19573																	
			Location	JBW7326A	JBW7327				JBW8003B		JMW0683		JMW0961		JMW7916		JPZ0342		JPZ7602	
			Sample Date	10/8/2024	10/10/2024				10/11/2024		10/10/2024		10/11/2024		10/10/2024		10/10/2024		10/11/2024	
			Sample ID	LORNG_JBW7326A_10082024SPLIT	LORNG_JBW7327_45_10102024		LORNG_JBW7327_45_10102024FD		LORNG_JBW7327_158_10102024		LORNG_JBW7327_265_10102024		LORNG_JBW8003B_10112024		LORNG_JMW0683_10102024		LORNG_JMW0961_10112024		LORNG_JMW7916_10102024		LORNG_JPZ0342_10102024		LORNG_JPZ7602_10112024	
			QC Code	N	N		FD		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.3	J	3.9	U	3.9	U	4.7	J	4.5	J	23.3		7.7	J	2.5	J	4.3	J	20		6.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	7.1	J	12.2		11.7		9.1		8.6	J	61.1		6.6	J	1.1	J	2.1	J	73.3	J	12.5	
		Perfluorohexanoic acid (PFHxA)	NG/L	5.4		19.3		19.4		8.5		9.3		139		14.3		1.9	J	2.2	J	93.4		18.8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.3	J	4.5		4.5		3.3	J	3.2	J	45		4.6		0.94	J	1.5	J	30.7		4.8	
		Perfluorooctanoic acid (PFOA)	NG/L	4.5		8.7		8.1		6.8		9.1		131		19.9		3.4	J	3	J	93.8		6.9	
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	11.9		1	J	2.1	U	2.2	U	3.2	J	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U	2	U	1.9	U	2	UJ	0.82	J	2	UJ	2.1	U	2.2	UJ	2	UJ	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	J	1.5	J	1.4	J	1.5	J	1.9	J	16.5		2.4	J	2.1	U	0.86	J	13.6		8.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.3	J	1.2	J	1.2	J	1.5	J	2.5	J	19.7		4.4	J	4.3	U	4.4	U	21.1		9.9	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	25.8		13.5		14.4		21		27.8		585		65.3		1.8	J	21.2		355		64.3	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.94	J	2	U	2	U	1.9	U	2	U	11.2		3.4	J	2.1	U	2.2	U	7.5		3.6	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	23		5.3		6.1		6.4		10.9		774		152		7.3		5.9		240		133	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	J	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8	U	7.8	U	7.8	U	7.7	U	8	U	8	U	8.1	U	8.5	U	8.8	U	8	U	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8	U	487		490		4.1	J	8	U	19.5	J	8.1	U	8.5	U	8.8	U	48.5		7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8	U	7.8	U	7.8	U	7.7	U	8	U	18.8	J	8.1	U	8.5	U	8.8	U	8	U	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	0.95	J	0.97	J	1.9	U	2	U	13.5		2	U	1.5	J	2.2	U	6.3		2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	3.7	J	4.4	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U	20	U	19	U	20	U	20	U	20	U	21	U	22	U	20	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U	20	U	19	U	20	U	20	U	20	U	21	U	22	U	20	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	UJ	2.1	U	2.2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	3.9	U	3.9	U	3.8	U	4	U	4	U	4	U	4.3	U	4.4	U	4	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2.2	U	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	9.8	U	9.8	U	9.6	U	10	U	10	U	10	UJ	11	U	11	U	10	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	20	U	19	U	20	U	20	U	20	U	21	U	22	U	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	20	U	19	U	20	U	20	U	20	U	21	U	22	U	20	U	20	U

Prepared by: AKN
Date: 2/26/25
Checked by:TC for EDS Validation Contractor
Date:2/26/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC19573													
		Location		MMW0004	MMW0020		MMW8015	OW05003		OW07003	OW24001	UNK-TC01	USMW025				
		Sample Date		10/10/2024	10/10/2024		10/11/2024	10/11/2024		10/11/2024	10/10/2024	10/10/2024	10/11/2024				
		Sample ID		LORNG_MMW0004_10102024	LORNG_MMW0020_60_10102024	LORNG_MMW0020_150_10102024	LORNG_MMW8015_10112024	LORNG_OW05003_10112024	LORNG_OW05003_10112024FD	LORNG_OW07003_10112024	LORNG_OW24001_10102024	LORNG_UNK-TC01_10102024	LORNG_USMW025_10112024	LORNG_USMW025_10112024FD			
		QC Code		N	N	N	N	N	FD	N	N	N	N	FD			
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier			
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	33 UJ	4.1 U	5 U	48.6	12.3 J	15.5	96.7	6.8 J	5.3 J	3.8 J	3.7 J			
		Perfluoropentanoic acid (PFPeA)	NG/L	20 UJ	2 UJ	2.5 UJ	145	33.3	38.7	382	14.3	2.3 J	3.2 J	3.4 J			
		Perfluorohexanoic acid (PFHxA)	NG/L	1.6 J	2 U	2.5 U	309	19.7	23.9	337	7.4	2.3 J	4.2	3.8			
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.71 J	2 U	2.5 U	90.7	17.7	21.1	152	3.6 J	2.3 J	2.3 J	2.2 J			
		Perfluorooctanoic acid (PFOA)	NG/L	1.3 J	1 U	1.3 U	281	19.5	23.7	291	2.2 J	2.1 J	3.7 J	3.8			
		Perfluorononanoic acid (PFNA)	NG/L	2 U	2 U	2.5 U	16.9	6.8	7.7	29.2	1.9 U	0.86 J	1.9 U	1.9 U			
		Perfluorodecanoic acid (PFDA)	NG/L	2 UJ	2 UJ	2.5 UJ	1.6 J	1.9 U	1.8 U	1.6 J	1.9 U	2 UJ	1.9 U	1.9 U			
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorododecanoic acid (PFDoA)	NG/L	1.4 J	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2 U	2.5 U	38.4	8	9.6	92.1	0.64 J	1.2 J	0.98 J	1.3 J			
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4 U	4.1 U	5 U	52.4	13.9	16.8	154	3.7 U	1.7 J	1.3 J	1.3 J			
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.3 J	0.73 J	1.2 J	1200	150	181	1310	5.4	16.3	24.4	24.1			
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2 U	2.5 U	30.8	8.6	9.8	91.5	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.7 J	2 U	2.5 U	1620	452	548	2980	5	23.8	18.1	18.9			
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	2.5 U	3.1 J	1.9 U	1.8 U	6.8	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.1 U	8.2 U	10 U	8.4 U	7.5 U	7.1 U	10.5 J	7.4 U	8 U	7.7 U	7.7 U			
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.1 U	8.2 U	10 U	117	7.5 U	3.5 J	618	7.4 U	8 U	7.7 U	7.7 U			
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.1 U	8.2 U	10 U	30.8	7.5 U	7.1 U	105	7.4 U	8 U	7.7 U	7.7 U			
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	2.5 U	31.5	1.9 U	1.8 U	5.1 J	1.9 U	2 U	1.9 U	1.9 U			
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20 U	20 U	25 U	21 U	19 U	18 U	18 U	19 U	20 U	19 U	19 U			
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20 U	20 U	25 U	21 U	19 U	18 U	18 U	19 U	20 U	19 U	19 U			
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	17 UJ	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	40 UJ	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4 U	4.1 U	5 U	4.2 U	3.8 U	3.6 U	3.6 U	3.7 U	4 U	3.8 U	3.8 U			
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2 U	2 U	2.5 U	2.1 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	1.9 U			
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	83 UJ	10 U	13 U	11 U	9.4 U	8.9 U	8.9 U	9.3 U	10 U	9.6 U	9.6 U			
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20 U	20 U	25 U	21 U	19 U	18 U	18 U	19 U	20 U	19 U	19 U			
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20 U	20 U	25 U	21 U	19 U	18 U	18 U	19 U	20 U	19 U	19 U			

Prepared by: AKN
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Checked by:TC for EDS Validation Contractor
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Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19573	E1633DR	T	FC19573-1	LORNG_8711-MW07_10112024	Perfluorononanesulfonic acid (PFNS)	0.81	J	0.81	J	IAG	NG/L
			FC19573-23	LORNG_AA11MW-01_10112024	Perfluoropentanoic acid (PFPeA)	26.4	=	26.4	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.4	J	1.4	J	IAG	NG/L
			FC19573-24	LORNG_AA11MW-02_10112024	Perfluoropentanoic acid (PFPeA)	25.6	=	25.6	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-25	LORNG_AA20MW-01_10112024	Perfluoropentanoic acid (PFPeA)	3.1	J	3.1	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	LCL,CVHL	NG/L
					Perfluorononanesulfonic acid (PFNS)	4.1	=	4.1	J	IAG	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.9	U	1.9	UJ	CVHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	9.7	U	9.7	UJ	CVHL	NG/L
			FC19573-26	LORNG_BW05012D_10142024	Perfluorobutanoic acid (PFBA)	33	U	33	UJ	HPHL	NG/L
					Perfluoropentanoic acid (PFPeA)	17	U	17	UJ	HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	2	U	2	UJ	IDG	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	2	U	2	UJ	IDG	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	4	U	4	UJ	IDG	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	17	U	17	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	33	U	33	UJ	HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4	U	4	UJ	IDG	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4	U	4	UJ	IDG	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4	U	4	UJ	IDG	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2	U	2	UJ	IDG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	83	U	83	UJ	HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	20	U	20	UJ	IDG	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	20	U	20	UJ	IDG	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19573	E1633DR	T	FC19573-27	LORNG_BW05012I_10142024	Perfluorobutanoic acid (PFBA)	33	U	33	UJ	HPHL	NG/L
					Perfluoropentanoic acid (PFPeA)	17	U	17	UJ	HPHL	NG/L
					Perfluorohexanoic acid (PFHxA)	20	U	20	UJ	IDG	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	20	U	20	UJ	IDG	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	17	U	17	UJ	HPHL	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	33	U	33	UJ	HPHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	17	U	17	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	33	U	33	UJ	HPHL	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	41	U	41	UJ	IDG	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	33	U	33	UJ	HPHL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	33	U	33	UJ	HPHL	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	20	U	20	UJ	IDG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	83	U	83	UJ	HPHL	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	200	U	200	UJ	IDG	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	200	U	200	UJ	IDG	NG/L
			FC19573-28	LORNG_BW05012S_10142024	Perfluoropentanoic acid (PFPeA)	3.4	J	3.4	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-29	LORNG_BW06005_10112024	Perfluoropentanoic acid (PFPeA)	32.3	=	32.3	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-30	LORNG_BW07003_10142024	Perfluoropentanoic acid (PFPeA)	321	=	321	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.5	J	2.5	J	IAG	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	CVHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	10	U	10	UJ	CVHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			FC19573-2	LORNG_BW12005_10112024	Perfluorononanesulfonic acid (PFNS)	4.5	=	4.5	J	IAG	NG/L
			FC19573-17	LORNG_BW13002_10102024	Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	IAG	NG/L
			FC19573-20	LORNG_EB023_10102024	Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	UJ	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	LCL,CVHL	NG/L
			FC19573-21	LORNG_FMW3410_10102024	Perfluoropentanoic acid (PFPeA)	51.9	=	51.9	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-22	LORNG_FMW3410_10102024FD	Perfluoropentanoic acid (PFPeA)	50.9	=	50.9	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	1.9	U	1.9	UJ	LCL,CVHL	NG/L
			FC19573-35	LORNG_JBW7327_265_10102024	Perfluoropentanoic acid (PFPeA)	8.6	=	8.6	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-4	LORNG_JBW8003B_10112024	Perfluorononanesulfonic acid (PFNS)	2	J	2	J	IAG	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19573	E1633DR	T	FC19573-31	LORNG_JMW0683_10102024	Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	UJ	CVHL	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	10	U	10	UJ	CVHL	NG/L
			FC19573-32	LORNG_JMW7916_10102024	Perfluoropentanoic acid (PFPeA)	2.1	J	2.1	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2.2	U	2.2	UJ	LCL,CVHL	NG/L
			FC19573-33	LORNG_JPZ0342_10102024	Perfluoropentanoic acid (PFPeA)	73.3	=	73.3	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-36	LORNG_MMW0004_10102024	Perfluorobutanoic acid (PFBA)	33	U	33	UJ	HPHL	NG/L
					Perfluoropentanoic acid (PFPeA)	20	U	20	UJ	IDG,IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
					Perfluorododecanoic acid (PFDoA)	1.4	J	1.4	J	IAG	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	17	U	17	UJ	HPHL	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	40	U	40	UJ	IDG	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	83	U	83	UJ	HPHL	NG/L
			FC19573-37	LORNG_MMW0020_150_10102024	Perfluoropentanoic acid (PFPeA)	2.5	U	2.5	UJ	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2.5	U	2.5	UJ	LCL,CVHL	NG/L
FC19573	E1633DR	T	FC19573-38	LORNG_MMW0020_60_10102024	Perfluoropentanoic acid (PFPeA)	2	U	2	UJ	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L
			FC19573-5	LORNG_MMW8015_10112024	Perfluorononanesulfonic acid (PFNS)	3.1	J	3.1	J	IAG	NG/L
			FC19573-46	LORNG_OW07003_10112024	Perfluorooctane sulfonamide (PFOSA)	5.1	=	5.1	J	IAG	NG/L
			FC19573-34	LORNG_UNK-TC01_10102024	Perfluoropentanoic acid (PFPeA)	2.3	J	2.3	J	IVD	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	UJ	LCL,CVHL	NG/L

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19671

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19671
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/15/2024 – 10/16/2024
Number of Samples: 37
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_AA07MW-01_10152024	FC19671-1	groundwater	S2BVM
LORNG_AA20MW-02_10152024	FC19671-2	groundwater	S2BVM
LORNG_AA20MW-02_10152024FD	FC19671-3	groundwater	S2BVM
LORNG_BW10008_10152024	FC19671-4	groundwater	S2BVM
LORNG_BW12007S_10152024	FC19671-5	groundwater	S2BVM
LORNG_JBW7316_10152024	FC19671-6	groundwater	S2BVM
LORNG_JBW8009_10152024	FC19671-7	groundwater	S2BVM
LORNG_JMW0882_10152024	FC19671-8	groundwater	S2BVM
LORNG_BW08003_10162024	FC19671-9	groundwater	S2BVM
LORNG_BW09001_10162024	FC19671-10	groundwater	S2BVM
LORNG_BW17006_10162024	FC19671-11	groundwater	S2BVM
LORNG_BW18008_10152024	FC19671-12	groundwater	S2BVM
LORNG_EB026_10152024	FC19671-13	equipment blank	S2BVM
LORNG_EB027_10152024	FC19671-14	equipment blank	S2BVM
LORNG_EB028_10152024	FC19671-15	equipment blank	S2BVM
LORNG_EB029_10152024	FC19671-16	equipment blank	S2BVM
LORNG_EB030_10162024	FC19671-17	equipment blank	S2BVM
LORNG_EB031_10162024	FC19671-18	equipment blank	S2BVM
LORNG_EB032_10162024	FC19671-19	equipment blank	S2BVM
LORNG_JMW0882_10152024FD	FC19671-20	groundwater	S2BVM
LORNG_JMW0941_10152024	FC19671-21	groundwater	S2BVM
LORNG_JMW0980_10152024	FC19671-22	groundwater	S2BVM
LORNG_LORNG-UNK-026_10152024	FC19671-23	groundwater	S2BVM
LORNG_OW20008_10162024	FC19671-24	groundwater	S2BVM
LORNG_JBW7350_10162024	FC19671-25	groundwater	S2BVM
LORNG_JMW0681_10162024	FC19671-26	groundwater	S2BVM
LORNG_OW01002_10162024	FC19671-27	groundwater	S2BVM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW20003_10162024	FC19671-28	groundwater	S2BVM
LORNG_JBW7341B_10162024	FC19671-29	groundwater	S2BVM
LORNG_JMW0880_10162024	FC19671-30	groundwater	S2BVM
LORNG_OW20007_10162024	FC19671-31	groundwater	S2BVM
LORNG_BW01008_10162024	FC19671-32	groundwater	S2BVM
LORNG_BW01008_10162024FD	FC19671-33	groundwater	S2BVM
LORNG_BW06009S_10162024	FC19671-34	groundwater	S2BVM
LORNG_BW12007D_10162024	FC19671-35	groundwater	S2BVM
LORNG_BW12007I_10162024	FC19671-36	groundwater	S2BVM
LORNG_BW18004_10162024	FC19671-37	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion with the following exceptions.

The observed %R for 8:2 FTS was outside of acceptance criteria for a CCV associated with sample LORNG_AA20MW-02_10152024. The result reported for the impacted analyte in the associated sample has been qualified "UJ" on this basis.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB026_10152024 was submitted as an equipment blank in association with samples LORNG_JMW0941_10152024 and LORNG_JMW0980_10152024. No problems were found for this criterion with the following exceptions. FOSA, PFOA and PFOS were positively identified. Positive sample results reported for the impacted analytes in the associated samples have been evaluated and qualified as appropriate per validation guidance.

Sample EB027_10152024 was submitted as an equipment blank in association with sample LORNG_JBW7316_10152024. No problems were found for this criterion.

Sample LORNG_EB028_10152024 was submitted as an equipment blank in association with samples LORNG_JMW0882_10152024 and LORNG_JMW0882_10152024FD. No problems were found for this criterion with the following exceptions. The analytes listed in the table below were positively identified. Positive sample results reported for the impacted analytes in the associated samples have been evaluated and qualified as appropriate per validation guidance.

FOSA	*NETFOSAA*	*NETFOSE*	*NMEFOSE*

PFHpA	*PFOA*	*PFOS*	

Sample LORNG_EB029_10152024 was submitted as an equipment blank in association with samples LORNG_BW10008_10152024 and LORNG_BW18008_10152024. No problems were found for this criterion.

Sample EB030_10162024 was submitted as an equipment blank in association with samples LORNG_BW08003_10162024 and LORNG_JBW7341B_10162024. No problems were found for this criterion.

Sample LORNG_EB031_10162024 was submitted as an equipment blank in association with the samples listed in the table below. No problems were found for this criterion.

LORNG_JMW0880_10162024	*LORNG_BW01008_10162024*
LORNG_JMW0681_10162024	*LORNG_BW01008_10162024FD*
LORNG_JBW7350_10162024	

Sample LORNG_EB032_10162024 was submitted as an equipment blank in association with samples LORNG_BW17006_10162024, LORNG_BW18004_10162024, and LORNG_OW20007_10162024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring result qualification were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exception.

The transition mass ratio was outside the established ratio limits for FOSA during the analysis of sample LORNG_EB026_10152024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

The transition mass ratios were outside the established ratio limits for PFNS during the analyses of samples LORNG_AA07MW-01_10152024 and LORNG_OW01002_10162024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_BW08003_10162024 was submitted for MS evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy indicators were acceptable.

Sample LORNG_BW01008_10162024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_BW09001_10162024 was submitted for matrix duplicate evaluation in association with this SDG. Adequate laboratory precision was demonstrated.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_AA20MW-02_10152024 and LORNG_AA20MW-02_10152024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_BW01008_10162024 and LORNG_BW01008_10162024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

Samples LORNG_JMW0882_10152024 and LORNG_JMW0882_10152024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analyte concentration into the instrument's linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks			x
Calibration Percent Relative Standard Deviation and Percent Difference			x
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_AA20MW-02_10152024	LORNG_AA20MW-02_10152024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	10.9	10.7	1.9		
PFBSA	82.7	80.1	3.2		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	14.1	13.6	3.6		
PFHPSA	12.7	12.3	3.2		
PFHXA	64	67	4.6		
PFHXSA	512	451	12.7		
PFMBA			0.0		
PFMPA			0.0		
PFNA	0.62	0.78	22.9		
PFNSA			0.0		
PFOA	21.5	20.9	2.8		
PFOS	246	238	3.3		
PFPA	19.1	19.4	1.6		
PFPESA	106	94.1	11.9		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_BW01008_10162024	LORNG_BW01008_10162024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	11.3	11.1	1.8		
PFBSA	6.5	6.6	1.5		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	13.2	12.7	3.9		
PFHPSA	3.2	3.5	9.0		
PFHXA	50	47.7	4.7		
PFHXSA	198	184	7.3		
PFMBA			0.0		
PFMPA			0.0		
PFNA	1	1.2	18.2		
PFNSA			0.0		
PFOA	42.1	40	5.1		
PFOS	65.6	64.7	1.4		
PFPA	39.8	38.9	2.3		
PFPESA	10.1	9.7	4.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_JMW0882_10152024	LORNG_JMW0882_10152024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA	6.4	4.1	43.8	6.6	ok
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA			0.0		
PFBSA			0.0		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	1.1	0.93	16.7		
PFHPSA	0	0.93	200.0	5.3	ok
PFHXA	2.2	1.4	44.4	5.3	ok
PFHXSA	9.1	7.4	20.6		
PFMBA			0.0		
PFMPA			0.0		
PFNA			0.0		
PFNSA			0.0		
PFOA	6.2	5.4	13.8		
PFOS	36.3	28.2	25.1		
PFPA	1.3	1	26.1		
PFPESA			0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/29/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19671

LAB: SGS Orlando

Samples Collected: 10/15/2024 – 10/16/2024

37 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

  Received on 10/18-10/19 at <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/15/2024 – 10/16/2024
Extracted 11/04/2024; 11/06/2024
Analyzed 11/25/2024; 11/26/2024; 11/27/2024 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_EB026_10152024 FC19671-13
13C7-PFUnDA ↑ run 1 associated result ND; no action
13C2-PFDoDA ↑ run 1 associated result ND; no action

LORNG_OW01002_10162024 FC19671-27
13C8-FOSA ↑ run 1 associated result reported from run 2; no action

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6212-LLBS ok
OP6279-LLBS ok

OP6212-BS ok
OP6279-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
LORNG_BW08003_10162024 FC19671-9 MS only
355-46-4 Perfluorohexanesulfonic acid MS ↓

LORNG_BW01008_10162024 FC19671-32 MS/MSD
Analyte MS MSD RPD flag
All ok

Matrix Duplicate:
LORNG_BW09001_10162024 FC19671-10
ok

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.

✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs

LORNG_EB026_10152024
Associated with
LORNG_JMW0941_10152024
LORNG_JMW0980_10152024
FOSA 1.5 J ng/L result <LOD flag U at LOD
PFOA 1.0 J ng/L result >LOD but <LOQ flag U at sample result
PFOS 0.57 J ng/L results ND or >5X; no action

LORNG_EB027_10152024
Associated with
LORNG_JBW7316_10152024
All ND

LORNG_EB028_10152024
Associated with
LORNG_JMW0882_10152024
LORNG_JMW0882_10152024FD
FOSA 4.7 ng/L results ND; no action

NETFOSAA	1.5 J ng/L	result >LOD but <LOQ flag U at sample result
NETFOSE	13.8 J ng/L	results ND; no action
NMEFOSE	5.6 J ng/L	results ND; no action
PFHpA	0.71 J ng/L	result >LOD but <LOQ flag U at sample result
PFOA	2.7 J ng/L	results <2X blank; flag U at sample result Results >2X but <5X flag J+
PFOS	1.3 J ng/L	results >5X; no action

LORNG_EB029_10152024
Associated with
LORNG_BW10008_10152024
LORNG_BW18008_10152024
All ND

LORNG_EB030_10162024
Associated with
LORNG_BW08003_10162024
LORNG_JBW7341B_10162024
All ND

LORNG_EB031_10162024
Associated with
LORNG_JMW0880_10162024
LORNG_JMW0681_10162024
LORNG_JBW7350_10162024
LORNG_BW01008_10162024
LORNG_BW01008_10162024FD
All ND

LORNG_EB032_10162024
Associated with
LORNG_BW17006_10162024
LORNG_BW18004_10162024
LORNG_OW20007_10162024
All ND

OP6212-MB all ND
OP6279-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS3T

11/19/24 all %RSD <20%

S3T16-ICV16 3T1032.D 11/21/24 15:27 n/a Initial cal verification 4
S3T16-ICV16 3T1033.D 11/21/24 15:42 n/a Initial cal verification 20
S3T18-IBLK 3T1168.D 11/25/24 12:58 n/a Instrument Blank
S3T18-CC16 3T1170.D 11/25/24 13:28 n/a Continuing cal 1.0LL
S3T18-CC16 3T1181.D 11/25/24 16:13 n/a Continuing cal 4
S3T18-ICCB 3T1182.D 11/25/24 16:29 n/a Continuing Calibration Blank

Samples 1 and 3

S3T18-CC16 3T1193.D 11/25/24 19:14 n/a Continuing cal 4
S3T18-ICCB 3T1194.D 11/25/24 19:29 n/a Continuing Calibration Blank

Samples 5,6,7,8,9,10,11,12

S3T18-CC16 3T1205.D 11/25/24 22:14 n/a Continuing cal 4
S3T18-ICCB 3T1206.D 11/25/24 22:30 n/a Continuing Calibration Blank

Samples 13,14,15,16,17,18,19

S3T18-CC16 3T1214.D 11/26/24 00:30 n/a Continuing cal 4

Instrument GCMS3T

11/26/24 all %RSD <20%

S3T19-IBLK 3T1280.D 11/26/24 21:19 n/a Instrument Blank
S3T19-ICV19 3T1281.D 11/26/24 21:34 n/a Initial cal verification 4
S3T19-ICV19 3T1282.D 11/26/24 21:49 n/a Initial cal verification 20
S3T19-CC19 3T1283.D 11/26/24 22:04 n/a Continuing cal 4
S3T19-CC19 3T1284.D 11/26/24 22:19 n/a Continuing cal 1.0LL

Samples 4,13,15

S3T19-CC19 3T1306.D 11/27/24 03:50 n/a Continuing cal 4

Instrument GCMS3T

11/14/24 all %RSD <20%

S3T20-IBLK 3T1364.D 11/27/24 19:43 n/a Instrument Blank
S3T20-ICV20 3T1365.D 11/27/24 19:58 n/a Initial cal verification 4
S3T20-ICV20 3T1366.D 11/27/24 20:13 n/a Initial cal verification 20
S3T20-CC20 3T1367.D 11/27/24 20:28 n/a Continuing cal 4
8:2FTS out ↑ flag UJ
S3T20-CC20 3T1368.D 11/27/24 20:43 n/a Continuing cal 1.0LL

Samples 1(not reported),2
LORNG_AA20MW-02_10152024

S3T20-CC20 3T1375.D 11/27/24 22:29 n/a Continuing cal 4

Instrument GCMS9Q

11/25/24 all %RSD <20%

S9Q34-IBLK 9Q2180.D 11/25/24 17:53 n/a Instrument Blank
4151-50-2 EtFOSA 0.0011 J ug/L ND; no action
S9Q34-ICV34 9Q2181.D 11/25/24 18:08 n/a Initial cal verification 4
S9Q34-ICV34 9Q2182.D 11/25/24 18:23 n/a Initial cal verification 20
S9Q34-CC34 9Q2183.D 11/25/24 18:38 n/a Continuing cal 4
S9Q34-CC34 9Q2184.D 11/25/24 18:52 n/a Continuing cal 1.0LL

S9Q34-CC34 9Q2218.D 11/26/24 03:13 n/a Continuing cal 4
S9Q34-ICCB 9Q2219.D 11/26/24 03:28 n/a Continuing Calibration Blank

Samples 20,21,22,23,24,25,26

S9Q34-CC34 9Q2230.D 11/26/24 06:10 n/a Continuing cal 4
S9Q34-ICCB 9Q2231.D 11/26/24 06:25 n/a Continuing Calibration Blank

Samples 27,28,29,30,31,32,33,34

S9Q34-CC34 9Q2242.D 11/26/24 09:07 n/a Continuing cal 4
S9Q34-ICCB 9Q2243.D 11/26/24 09:21 n/a Continuing Calibration Blank

Samples 35,36,37

S9Q34-ECC34 9Q2247.D 11/26/24 10:20 n/a Ending cal 4
S9Q34-ICCB 9Q2248.D 11/26/24 10:35 n/a Continuing Calibration Blank

S9Q35-IBLK 9Q2255.D 11/26/24 19:08 n/a Instrument Blank
S9Q35-CC34 9Q2256.D 11/26/24 19:23 n/a Continuing cal 4
S9Q35-CC34 9Q2257.D 11/26/24 19:37 n/a Continuing cal 1.0LL

Sample 27

S9Q35-CC34 9Q2268.D 11/26/24 22:19 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)

- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_AA07MW-01_10152024	FC19671-1	PFNS	flag J
LORNG_EB026_10152024	FC19671-13	FOSA	flag J
LORNG_OW01002_10162024	FC19671-27	PFNS	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_AA20MW-02_10152024 and LORNG_AA20MW-02_10152024FD	all ok
LORNG_BW01008_10162024 and LORNG_BW01008_10162024FD	all ok
LORNG_JMW0882_10152024 and LORNG_JMW0882_10152024FD	all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
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| | | |

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19671																			
			Location	JBW7341B		JBW7350		JBW8009		JMW0681		JMW0880		JMW0882				JMW0941		JMW0980		OW01002		OW20007	
			Sample Date	10/16/2024		10/16/2024		10/15/2024		10/16/2024		10/16/2024		10/15/2024				10/15/2024		10/15/2024		10/16/2024		10/16/2024	
			Sample ID	LORNG_JBW7341B_10162024		LORNG_JBW7350_10162024		LORNG_JBW8009_10152024		LORNG_JMW0681_10162024		LORNG_JMW0880_10162024		LORNG_JMW0882_10152024		LORNG_JMW0882_10152024FD		LORNG_JMW0941_10152024		LORNG_JMW0980_10152024		LORNG_OW01002_10162024		LORNG_OW20007_10162024	
			QC Code	N		N		N		N		N		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5.9	J	2.3	J	6.9	J	2.4	J	2.5	J	5.3	U	4	U	4.1	U	4	U	87.6		7.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	7.8		3.8	J	12.6		2.8	J	3.6	J	1.3	J	1	J	2.1	U	1.1	J	217		11.8	
		Perfluorohexanoic acid (PFHxA)	NG/L	11.3		5.4		7.4		2.6	J	4.7		2.2	J	1.4	J	2.1	U	2.7	J	609		11	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.9		3.4	J	6.3		1.3	J	1.5	J	2.6	U	2	U	2.1	U	1	J	143		11.9	
		Perfluorooctanoic acid (PFOA)	NG/L	13.8		5.7		4.8		2	J	4.9		6.2	J+	5.4	U	1	U	3.6	U	474		13.2	
		Perfluorononanoic acid (PFNA)	NG/L	0.92	J	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	36.8		1.4	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	3.7	J	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	J	1	J	1.6	J	1.6	J	2	U	2.6	U	2	U	2.1	U	0.68	J	64.7		2.5	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.5	J	1.2	J	1.6	J	1.9	J	4	U	5.3	U	4	U	4.1	U	1.2	J	101		3.6	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	73.8		17.9		17		12.1		7.2		9.1		7.4		2.1	U	2	J	2680		66.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.2	J	2	U	2.2	U	1.9	U	2	U	2.6	U	0.93	J	2.1	U	2	U	63.9		1.7	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	42.7		7		19.1		6.9		6.6		36.3		28.2		2.1	U	20.1		3120		66.6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	6.2	J	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.8	U	8	U	8.6	U	7.5	U	7.9	U	11	U	8.1	U	8.2	U	8.1	U	4	J	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.8	U	8	U	8.6	U	7.5	U	7.9	U	11	U	8.1	U	8.2	U	8.1	U	174		7.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U	8	U	8.6	U	7.5	U	7.9	U	11	U	8.1	U	8.2	U	8.1	U	66.5		7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.5	J	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	82		1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	6.4	U	4.1	U	4.1	U	6.7		4.1	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	20	U	22	U	19	U	20	U	26	U	20	U	21	U	20	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	20	U	22	U	19	U	20	U	26	U	20	U	21	U	20	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U	4	U	4.3	U	3.8	U	4	U	5.3	U	4	U	4.1	U	4	U	4.1	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2	U	2.2	U	1.9	U	2	U	2.6	U	2	U	2.1	U	2	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.7	U	10	U	11	U	9.4	U	9.9	U	13	U	10	U	10	U	10	U	10	U	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	20	U	22	U	19	U	20	U	26	U	20	U	21	U	20	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	20	U	22	U	19	U	20	U	26	U	20	U	21	U	20	U	20	U	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/21/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19671			
			Location	OW20008		UNK-026	
			Sample Date	10/16/2024		10/15/2024	
			Sample ID	LORNG_OW20008_10162024		LORNG_LORNG-UNK-026_10152024	
			QC Code	N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	5.4	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	14	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	22.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	9.3	
		Perfluorooctanoic acid (PFOA)	NG/L	0.96	U	27.4	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.3	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	4.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	5.1	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	97.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2.7	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	105	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7	U	7.6	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.7	U	7.6	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7	U	7.6	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.4	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U	9.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/21/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19671	E1633DR	T	FC19671-1	LORNG_AA07MW-01_10152024	Perfluorononanesulfonic acid (PFNS)	5.7	=	5.7	J	IAG	NG/L
			FC19671-2	LORNG_AA20MW-02_10152024	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.5	U	7.5	UJ	CVHL	NG/L
			FC19671-13	LORNG_EB026_10152024	Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	IAG	NG/L
			FC19671-8	LORNG_JMW0882_10152024	Perfluoroheptanoic acid (PFHpA)	1.1	J	2.6	U	FBL	NG/L
					Perfluorooctanoic acid (PFOA)	6.2	=	6.2	J+	FBL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	6.4	J	6.4	U	FBL	NG/L
			FC19671-20	LORNG_JMW0882_10152024FD	Perfluoroheptanoic acid (PFHpA)	0.93	J	2	U	FBL	NG/L
					Perfluorooctanoic acid (PFOA)	5.4	=	5.4	U	FBL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.1	J	4.1	U	FBL	NG/L
			FC19671-22	LORNG_JMW0980_10152024	Perfluorooctanoic acid (PFOA)	3.9	J	3.6	U	FBL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	J	2	U	FBL	NG/L
			FC19671-27	LORNG_OW01002_10162024	Perfluorononanesulfonic acid (PFNS)	6.2	=	6.2	J	IAG	NG/L

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Prepared by:AKN
Date:2/10/25
Checked by:TC for EDS Subcontractor
Date:2/21/25

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC19782

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19782
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/17/2024 – 10/18/2024, and 10/21/2024
Number of Samples: 42
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BB_BW003_10172024	FC19782-1	groundwater	S4VM
LORNG_BB_OW003_10172024	FC19782-2	groundwater	S4VM
LORNG_BW05013S_10172024	FC19782-3	groundwater	S4VM
LORNG_JBW7215B_10172024	FC19782-4	groundwater	S4VM
LORNG_JBW7711_10172024	FC19782-5	groundwater	S4VM
LORNG_JBW7737B_10172024	FC19782-6	groundwater	S4VM
LORNG_JBW7737B_10172024FD	FC19782-7	groundwater	S4VM
LORNG_JMW0962_10172024	FC19782-8	groundwater	S4VM
LORNG_ASMW101_10172024	FC19782-9	groundwater	S4VM
LORNG_BW05013D_10172024	FC19782-10	groundwater	S4VM
LORNG_BW20005_10172024	FC19782-11	groundwater	S4VM
LORNG_EB033_10172024	FC19782-12	equipment blank	S2BVM
LORNG_EB034_10172024	FC19782-13	equipment blank	S2BVM
LORNG_GB_BW001_10172024	FC19782-14	groundwater	S4VM
LORNG_BW03002_10182024	FC19782-15	groundwater	S4VM
LORNG_BW06009I_10182024	FC19782-16	groundwater	S4VM
LORNG_EB036_10172024	FC19782-17	equipment blank	S2BVM
LORNG_EB037_10172024	FC19782-18	equipment blank	S2BVM
LORNG_EB038_10182024	FC19782-19	equipment blank	S2BVM
LORNG_GB_OW001_10182024	FC19782-20	groundwater	S4VM
LORNG_JBW7339A_10182024	FC19782-21	groundwater	S4VM
LORNG_JBW7339B_10182024	FC19782-22	groundwater	S4VM
LORNG_AA18MW-01_10212024	FC19782-23	groundwater	S4VM
LORNG_BW01005_10212024	FC19782-24	groundwater	S2BVM
LORNG_BW24001_10212024	FC19782-25	groundwater	S2BVM
LORNG_EB039_10182024	FC19782-26	equipment blank	S2BVM
LORNG_EB041_10212024	FC19782-27	equipment blank	S2BVM

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_EB042_10212024	FC19782-28	equipment blank	S2BVM
LORNG_LF2MW3_10172024	FC19782-29	groundwater	S2BVM
LORNG_OW05005_10172024	FC19782-30	groundwater	S2BVM
LORNG_JBW7304_10172024	FC19782-31	groundwater	S2BVM
LORNG_JBW7336A_10172024	FC19782-32	groundwater	S2BVM
LORNG_MMW0531_10172024	FC19782-33	groundwater	S2BVM
LORNG_OW20009_10172024	FC19782-34	groundwater	S2BVM
LORNG_JMW0982_10182024	FC19782-35	groundwater	S2BVM
LORNG_JMW0982_10182024FD	FC19782-36	groundwater	S2BVM
LORNG_MMW0017_10182024	FC19782-37	groundwater	S2BVM
LORNG_OW07001_10172024	FC19782-38	groundwater	S2BVM
LORNG_JBW7338B_10212024	FC19782-39	groundwater	S2BVM
LORNG_JMW0301C_10182024	FC19782-40	groundwater	S2BVM
LORNG_MMW0330_10212024	FC19782-41	groundwater	S2BVM
LORNG_OW05006_10212024	FC19782-42	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB033_10172024 was submitted as an equipment blank in association with samples LORNG_LF2MW3_10172024 and LORNG_ASMW101_10172024. No problems were found for this criterion.

Sample LORNG_EB034_10172024 was submitted as an equipment blank in association with samples LORNG_JBW7336A_10172024 and LORNG_JBW7711_10172024. No problems were found for this criterion.

Sample LORNG_EB036_10172024was submitted as an equipment blank in association with sample LORNG_MMW0531_10172024. No problems were found for this criterion.

Sample LORNG_EB037_10172024 was submitted as an equipment blank in association with samples LORNG_JMW0962_10172024, LORNG_JBW7215B_10172024, and LORNG_JBW7304_10172024. No problems were found for this criterion.

*Sample LORNG_EB038_10182024 was submitted as an equipment blank in association with samples LORNG_J**M**W0982_10182024 and LORNG_J**M**W0982_10182024FD. No problems were found for this criterion.*

Sample LORNG_EB039_10182024 was submitted as an equipment blank in association with samples LORNG_JBW7339A_10182024, LORNG_JBW7339B_10182024, and LORNG_JMW0301C_10182024. No problems were found for this criterion.

Sample LORNG_EB041_10212024 was submitted as an equipment blank in association with samples LORNG_BW24001_10212024, LORNG_JBW7338B_10212024, and LORNG_MMW0330_10212024. No problems were found for this criterion.

Sample LORNG_EB042_10212024 was submitted as an equipment blank in association with samples LORNG_AA18MW-01_10212024 and LORNG_BW01005_10212024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring result qualification were found for this criterion with the following exception.

The observed isotope dilution standard recovery for 13C8-FOSA was greater than the upper acceptance limit during the analysis of sample LORNG_OW07001_10172024. The result reported for the associated target analyte in the impacted sample has been qualified "J-" on this basis.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of Level 2B and Level 4 data validation. No anomalies were identified with the following exception.

The transition mass ratio was outside the established ratio limits for PFNS during the analysis of sample LORNG_AA18MW-01_10212024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted result has been qualified "J" on this basis.

Additional target compound identification criterion was verified as part of the Level 4 data validation. No anomalies were identified.

9. COMPOUND QUANTIFICATION

Target compound quantitation was verified as part of the Level 4 data validation. No anomalies were identified.

Manual integrations were reviewed at the Stage 4 level. No anomalies were identified.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_JBW7215B_10172024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable.

Sample LORNG_OW05005_10172024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

Sample LORNG_BW01005_10212024 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

Samples LORNG_JMW0982_10182024 and LORNG_JMW0982_10182024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

Samples LORNG_JBW7737B_10172024 and LORNG_JBW7737B_10172024FD were submitted as a field duplicate pair in association with this SDG. Upon evaluation, adequate field precision was demonstrated.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion with the following exception. The recovery for NEtFOSAA was less than the lowest acceptance limit in the low level LCS associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "UJ" on this basis.

LORNG_JMW0301C_10182024	*LORNG_OW05005_10172024*
LORNG_MMW0330_10212024	*LORNG_OW05006_10212024*

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were analyzed as necessary to confirm results or bring analyte concentrations into the instrument's linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards			x
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample			x
Other Quality Control Data out of Specification	x		
Field Duplicate	x		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Calculation Documentation

Field Duplicate Calculations

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_JBW0982_10182024	LORNG_JBW0982_10182024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA	1.1	0	0.0	4.2	
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA			0.0		
PFBSA			0.0		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA			0.0		
PFHPSA			0.0		
PFHXA	0.56	0.78	32.8	4.2	ok
PFHXSA	4.3	4.6	6.7		
PFMBA			0.0		
PFMPA			0.0		
PFNA			0.0		
PFNSA			0.0		
PFOA	1.1	1.3	16.7		
PFOS	10.8	11	1.8		
PFPA			0.0		
PFPESA			0.0		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Parameters	Original Sample	Duplicate Sample		LOD	Flag
	LORNG_JBW7737B_10172024	LORNG_JBW7737B_10172024FD	RPD		
11CLPF3OUDSA			0.0		
33FTCA			0.0		
42FTSA			0.0		
53FTCA			0.0		
62FTSA			0.0		
73FTCA			0.0		
82FTSA			0.0		
9CLPF3ONSA			0.0		
ADONA			0.0		
FOSA			0.0		
HFPODA			0.0		
NETFOSA			0.0		
NETFOSAA			0.0		
NETFOSE			0.0		
NFDHA			0.0		
NMEFOSA			0.0		
NMEFOSAA			0.0		
NMEFOSE			0.0		
PFBA	10	9.8	2.0		
PFBSA	12.8	13.7	6.8		
PFDA			0.0		
PFDOA			0.0		
PFDOSA			0.0		
PFDSA			0.0		
PFEESA			0.0		
PFHPA	13.8	14.4	4.3		
PFHPSA	8	8.6	7.2		
PFHXA	36.9	38.7	4.8		
PFHXSA	143	152	6.1		
PFMBA			0.0		
PFMPA			0.0		
PFNA	1.1	1.4	24.0		
PFNSA			0.0		
PFOA	16.7	17.2	2.9		
PFOS	408	385	5.8		
PFPA	23.2	24.1	3.8		
PFPESA	17.4	19	8.8		
PFTEA			0.0		
PFTRIA			0.0		
PFUNA			0.0		

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS7Q
Curve Date: 12/2/2024
Compound: PFBA
Internal Standard: 13C4-PFBA

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
13841	513060	0.8	10	0.026977352	0.08	0.0064	0.337
31829	553067	1.6	10	0.057549989	0.16	0.0256	0.360
111754	560023	5	10	0.199552518	0.5	0.25	0.399
228230	558750	10	10	0.408465324	1	1	0.408
467859	554685	20	10	0.843467914	2	4	0.422
1288591	521132	50	10	2.472676788	5	25	0.495
2448213	525292	100	10	4.660670637	10	100	0.466
5805966	504562	250	10	11.50694266	25	625	0.460
SUM OF EACH COLUMN :				20.1763	43.74	755.282	3.3471

CALIBRATION MODELS:

Average Response Factor:
Cx = Ax*Cis/Ais/RF

			Results
Average RF	0.418	AVERAGE(RF)	0.4184
RSD	12.9%	STDEV(RF)/(AveRF)	12.885

Linear Regression:
y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
Slope (m)	0.46216	0.46425	0.44742	SLOPE(RatioY,RatioX)
Intercept (b)	-0.00482	-0.01624	-0.010280	INTERCEPT(RatioY,RatioX)
CC (R)	0.99982	0.99938	0.99732	CORREL(RatioY,RatioX)
COD (R^2)	0.99963	0.99876	0.99464	POWER(R,2)

Quadratic Regression:
$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
x^2 Coefficient (a)	-0.00087	-0.00191	0.00634	LINEST(RatioY,RatioX:RatioX^2,1,1)
x Coefficient (b)	0.48345	0.50894	0.34959	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
Intercept (c)	-0.03908	-0.08010	0.01209	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
COD (R^2)	0.99978			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S7Q201-ICV201	7Q14335.D	445813	544399	10	19.573	17.823	17.989	18.533	17.804	17.783	22.186	19.57
S7Q201-CC201	7Q14337.D	13707	508349	10	0.644	0.688	0.931	0.832	1.366	2.105	0.425	0.64
FC19782-4	7Q14344.D	13568	648247	10	0.500	0.557	0.801	0.698	1.242	1.987	0.253	0.5
FC19782-4 MS	7Q14345.D	256071	620863	10	9.858	9.029	9.234	9.448	9.355	9.713	11.224	9.86
FC19782-4 MSD	7Q14346.D	255510	622124	10	9.816	8.991	9.197	9.409	9.319	9.679	11.176	9.82
FC19782-10	7Q14354.D	153761	579204	10	6.345	5.848	6.068	6.163	6.307	6.807	7.155	6.35
OP6374-MB	7Q14339.D	0	718849	10	0.000	0.104	0.350	0.230	0.809	1.575	-0.346	ND
OP6374-BS	7Q14338.D	245643	638164	10	9.200	8.433	8.641	8.833	8.784	9.169	10.466	9.2
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

Internal Standard Initial Calibration and Calculation Worksheet

Lab: SGS
Method: 1633
Instrument: GCMS7Q
Curve Date: 12/2/2024
Compound: 13C4-PFBA
Internal Standard: M4-PFBA

Initial Calibration Model Worksheet

Compound Area Ax	ISTD Area Ais	Compound Conc Cx	ISTD Conc Cis	Y-Values Ax/Ais	X-Values Cx/Cis	X^2 $(Cx/Cis)^2$	RF (Ax*Cis)/(Ais*Cx)
513060	298879	10	5	1.716614416	2	4	0.858
553067	324004	10	5	1.70697584	2	4	0.853
560023	325827	10	5	1.718774073	2	4	0.859
558750	329870	10	5	1.693849092	2	4	0.847
554685	324880	10	5	1.707353484	2	4	0.854
521132	307145	10	5	1.696697	2	4	0.848
525292	308472	10	5	1.702883892	2	4	0.851
504562	298855	10	5	1.688317077	2	4	0.844
SUM OF EACH COLUMN :				13.6315	16	32	6.8157

CALIBRATION MODELS:

Average Response Factor:
Cx = Ax*Cis/Ais/RF

			reported
Average RF	0.852	AVERAGE(RF)	0.852
RSD	0.6%	STDEV(RF)/(AveRF)	0.628

Linear Regression:

y = mx + b
Cx = (((Ax/Ais)-b)/m)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
Slope (m)	#DIV/0!	#DIV/0!	#DIV/0!	SLOPE(RatioY,RatioX)
Intercept (b)	#DIV/0!	#DIV/0!	#DIV/0!	INTERCEPT(RatioY,RatioX)
CC (R)	#DIV/0!	#DIV/0!	#DIV/0!	CORREL(RatioY,RatioX)
COD (R^2)	#DIV/0!	#DIV/0!	#DIV/0!	POWER(R,2)

Quadratic Regression:

$y = ax^2 + bx + c$
Cx=(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis

Weighting	Equal	1/X	$1/X^2$	Equation
x^2 Coefficient (a)	0.00000	#DIV/0!	#DIV/0!	LINEST(RatioY,RatioX:RatioX^2,1,1)
x Coefficient (b)	0.00000	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,2)
Intercept (c)	1.70393	#DIV/0!	#DIV/0!	INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),1,3)
COD (R^2)	0.16601			INDEX(LINEST(RatioY,RatioX:RatioX^2,1,1),3,1)

Sample Concentration Calculations

Sample ID	File ID	Compound Area Ax	ISTD Area Ais	ISTD Conc Cis	Ave RF On-column Conc	Linear Cal On-column Conc Equal Weighting	Linear Cal On-column Conc 1/X Weighting	Linear Cal On-column Conc $1/X^2$ Weighting	Quadratic Cal On-column Conc Equal Weighting	Quadratic Cal On-column Conc 1/X Weighting	Quadratic Cal On-column Conc $1/X^2$ Weighting	
Equations:					Ax*Cis/Ais/RF	((Ax/Ais-b)/m)*Cis			(SQRT(b^2-(4*a*(c-(Ax/Ais))))-b)/(2*a)*Cis			
S7Q201-ICV201	7Q14335.D	544399	325949	5	9.802	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.8
S7Q201-CC201	7Q14337.D	508349	303354	5	9.835	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.83
FC19782-4	7Q14344.D	648247	382992	5	9.933	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.93
FC19782-4 MS	7Q14345.D	620863	394414	5	9.238	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.24
FC19782-4 MSD	7Q14346.D	622124	384630	5	9.493	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.49
FC19782-10	7Q14354.D	579204	395803	5	8.588	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	8.59
OP6374-MB	7Q14339.D	718849	408399	5	10.330	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	10.33
OP6374-BS	7Q14338.D	638164	404670	5	9.255	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9.26
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

Final Sample Result Calculation

PFAS
method 1633

on column result (ng/ml) x final volume(ml)/initial sample amount (g) x 1 g/ 1 ml x 1000g/1 ml x dilution factor = calculated result

density of water = 1g/1ml

Sample	Analyte	On column results (ug/L)	Final Prep Volume (ml)	Initial Sample amount (ml)	Dilution Factor	Calculate result (ng/L)	Reported Result (ng/L)
FC19782-4	PFBA	0.5	5	530	1	4.716981132	4.7
FC19782-10	PFBA	6.35	5	555	1	57.20720721	57.2

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/30/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19782

LAB: SGS Orlando

Samples Collected: 10/17/2024 – 10/18/2024, and 10/21/2024

42 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/23 at <6 C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)

- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/17/2024 – 10/18/2024, and 10/21/2024
Extracted 11/11
Analyzed 12/02; 12/03; 12/04 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_OW07001_10172024 FC19782-38

13C8-FOSA ↑ run 1 flag J-

13C2-4:2FTS ↑ run 1 ND; no action

LORNG_JBW7338B_1021202 FC19782-39

13C2-4:2FTS ↑ run 1 associated reported from run 2 ; no action

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected

- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6374-LLBS ok
OP6377-LLBS NEtFOSAA ↓ flag UJ
Associated with samples 30,40,41,42
LORNG_JMW0301C_10182024
LORNG_MMW0330_10212024
LORNG_OW05005_10172024
LORNG_OW05006_10212024

OP6376-LLBS ok

OP6374-BS ok
OP6377-BS ok
OP6376-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_JBW7215B_10172024 FC19782-4 MS/MSD ok

LORNG_OW05005_10172024 FC19782-30 MS/MSD

Analyte	MS	MSD	RPD	Flag
PFHxS	ok	↓	ok	inconclusive; no action

LORNG_BW01005_10212024 FC19782-24 MS/MSD all ok (4X rule)

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs
LORNG_EB033_10172024
All ND
Associated with
LORNG_LF2MW3_10172024
LORNG_ASMW101_10172024

LORNG_EB034_10172024
All ND
Associated with
LORNG_JBW7336A_10172024
LORNG_JBW7711_10172024

LORNG_EB036_10172024
All ND
Associated with
LORNG_MMW0531_10172024

LORNG_EB037_10172024
All ND
Associated with
LORNG_JMW0962_10172024
LORNG_JBW7215B_10172024
LORNG_JBW7304_10172024

LORNG_EB038_10182024
Associated with
LORNG_JMW0982_10182024
LORNG_JMW0982_10182024FD

LORNG_EB039_10182024
All ND
Associated with
LORNG_JBW7339A_10182024
LORNG_JBW7339B_10182024
LORNG_JMW0301C_10182024

LORNG_EB041_10212024
All ND
Associated with
LORNG_BW24001_10212024
LORNG_JBW7338B_10212024
LORNG_MMW0330_10212024

LORNG_EB042_10212024
All ND
Associated with
LORNG_AA18MW-01_10212024
LORNG_BW01005_10212024

OP6374-MB all ND
OP6377-MB all ND
OP6376-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.

- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS4Q

12/03/24 all %RSD <20%

S4Q1014-IBLK 4Q68922.D 12/03/24 16:40 n/a Instrument Blank
S4Q1014-ICV1014 4Q68923.D 12/03/24 16:55 n/a Initial cal verification 4
S4Q1014-ICV1014 4Q68924.D 12/03/24 17:09 n/a Initial cal verification 20
S4Q1014-CC1014 4Q68925.D 12/03/24 17:24 n/a Continuing cal 4
S4Q1014-CC1014 4Q68926.D 12/03/24 17:39 n/a Continuing cal 1.0LL

Samples 20,21,22,23,24

S4Q1014-CC1014 4Q68937.D 12/03/24 20:21 n/a Continuing cal 4
S4Q1014-ICCB 4Q68938.D 12/03/24 20:36 n/a Continuing Calibration Blank

Samples 25,26,27,28,29,31,32,33,34,35

S4Q1014-CC1014 4Q68949.D 12/03/24 23:18 n/a Continuing cal 4
S4Q1014-ICCB 4Q68950.D 12/03/24 23:33 n/a Continuing Calibration Blank

Samples 36,37,38

S4Q1014-ECC1014 4Q68955.D 12/04/24 00:47 n/a Ending cal 4
S4Q1014-ICCB 4Q68956.D 12/04/24 01:02 n/a Continuing Calibration Blank

Instrument GCMS4Q

12/04/24 all %RSD <20%

S4Q1015-IBLK 4Q68977.D 12/04/24 18:47 n/a Instrument Blank
S4Q1015-ICV1015 4Q68978.D 12/04/24 19:02 n/a Initial cal verification 4
S4Q1015-ICV1015 4Q68979.D 12/04/24 19:17 n/a Initial cal verification 20
S4Q1015-CC1015 4Q68980.D 12/04/24 19:32 n/a Continuing cal 4
S4Q1015-CC1015 4Q68981.D 12/04/24 19:46 n/a Continuing cal 1.0LL

Samples 38,39

S4Q1015-CC1015 4Q68991.D 12/04/24 22:14 n/a Continuing cal 4

Instrument GCMS4T

12/03/24 all %RSD <20%

S4T7-IBLK 4T538.D 12/03/24 13:36 n/a Instrument Blank
PFOS 0.00069 J ug/L all associated results >5X blank; no action
S4T7-ICV7 4T539.D 12/03/24 13:50 n/a Initial cal verification 20
S4T7-CC7 4T540.D 12/03/24 14:06 n/a Continuing cal 4
S4T7-CC7 4T541.D 12/03/24 14:20 n/a Continuing cal 1LL

S4T7-CC7 4T551.D 12/03/24 16:54 n/a Continuing cal 4
S4T7-ICCB 4T552.D 12/03/24 17:09 n/a Continuing Calibration Blank

Samples 40,41,42

S4T7-CC7 4T563.D 12/03/24 19:48 n/a Continuing cal 4

Instrument GCMS7Q

12/02/24 all %RSD <20%
S7Q201-IBLK 7Q14333.D 12/02/24 17:06 n/a Instrument Blank
PFTrDA 0.00055 J ug/L all associated ND; no action
S7Q201-ICV201 7Q14335.D 12/02/24 17:34 n/a Initial cal verification 20
S7Q201-CC201 7Q14336.D 12/02/24 17:48 n/a Continuing cal 4
S7Q201-CC201 7Q14337.D 12/02/24 18:02 n/a Continuing cal 1.0LL

Samples 1,2,3,4,5

S7Q201-CC201 7Q14348.D 12/02/24 20:36 n/a Continuing cal 4
S7Q201-ICCB 7Q14349.D 12/02/24 20:50 n/a Continuing Calibration Blank

Samples 6,7,8,9,10,11,12,13,14,15

S7Q201-CC201 7Q14360.D 12/02/24 23:23 n/a Continuing cal 4
S7Q201-ICCB 7Q14361.D 12/02/24 23:37 n/a Continuing Calibration Blank

Samples 16,17,18,19

S7Q201-ECC201 7Q14366.D 12/03/24 00:47 n/a Ending cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_AA18MW-01_10212024 FC19782-23 PFNS FLAG J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

LORNG_JMW0982_10182024 and LORNG_JMW0982_10182024FD all ok

LORNG_JBW7737B_10172024 and LORNG_JBW7737B_10172024FD all ok

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

| | | |

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19782																	
			Location	FIELDQC														GB_BW001		GB_OW001	
			Sample Date	10/17/2024				10/18/2024				10/21/2024				10/17/2024		10/18/2024	
			Sample ID	B034_10172024		LORNG_EB036_10172024		LORNG_EB037_10172024		LORNG_EB038_10182024		LORNG_EB039_10182024		LORNG_EB041_10212024		LORNG_EB042_10212024		LORNG_GB_BW001_10172024		LORNG_GB_OW001_10182024	
			QC Code	EB		EB		EB		EB		EB		EB		EB		N		N	
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorohexanoic acid (PFHxA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorooctanoic acid (PFOA)	NG/L	U	0.97	U	0.97	U	0.93	U	1	U	0.99	U	0.97	U	0.93	U	0.96	U	
		Perfluorononanoic acid (PFNA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorodecanoic acid (PFDA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	7.8	U	7.8	U	7.5	U	8.1	U	7.9	U	7.8	U	7.4	U	7.7	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	U	7.8	U	7.8	U	7.5	U	8.1	U	7.9	U	7.8	U	7.4	U	7.7	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	7.8	U	7.8	U	7.5	U	8.1	U	7.9	U	7.8	U	7.4	U	7.7	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	U	19	U	19	U	19	U	20	U	20	U	19	U	19	U	19	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	U	19	U	19	U	19	U	20	U	20	U	19	U	19	U	19	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	3.9	U	3.9	U	3.7	U	4	U	4	U	3.9	U	3.7	U	3.8	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	1.9	U	1.9	U	1.9	U	2	U	2	U	1.9	U	1.9	U	1.9	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U	9.7	U	9.7	U	9.3	U	10	U	9.9	U	9.7	U	9.3	U	9.6	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	19	U	19	U	19	U	20	U	20	U	19	U	19	U	19	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	19	U	19	U	19	U	20	U	20	U	19	U	19	U	19	U	

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/24/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19782																			
			Location	JMW0982				LF2MW3		MMW0017		MMW0330		MMW0531		OW05005		OW05006		OW07001		OW20009	
			Sample Date	10/18/2024				10/17/2024		10/18/2024		10/21/2024		10/17/2024		10/17/2024		10/21/2024		10/17/2024		10/17/2024	
			Sample ID	LORNG_JMW0982_10182024		LORNG_JMW0982_10182024FD		LORNG_LF2MW3_10172024		LORNG_MMW0017_10182024		LORNG_MMW0330_10212024		LORNG_MMW0531_10172024		LORNG_OW05005_10172024		LORNG_OW05006_10212024		LORNG_OW07001_10172024		LORNG_OW20009_10172024	
			QC Code	N		FD		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.2	U	4	U	3.9	U	6.6	J	5.8	J	8.8	J	19.6		4.7	J	85.2		4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.1	U	2	U	2	U	14.5		8.2		14.3		55.8		11		268		2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.56	J	0.78	J	1.1	J	17.5		10		10.2		35.4		7.7		206		2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.1	U	2	U	0.62	J	9.8		5.8		8.2		26.3		4.7		154		2	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.1	J	1.3	J	1.4	J	13.6		6.9		5.7		23.9		6.6		167		1	U
		Perfluorononanoic acid (PFNA)	NG/L	2.1	U	2	U	2	U	1.1	J	0.66	J	1	J	6.8		1.7	J	35.7		2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.4	J	1.9	U	1.2	J	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.1	U	2	U	2	U	3.3	J	3.4	J	1.7	J	12.6		2.8	J	110		2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.2	U	4	U	3.9	U	4.2	J	5.1		4.7	U	21.3		2.9	J	209		4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.3		4.6		5.4		63.2		52.1		11.1		174		27.8		1290		2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.1	U	2	U	2	U	1.8	J	2.2	J	2.3	U	7.1		1.5	J	95.3		2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	10.8		11		4.9		74.3		60.5		11.7		232		49.8		2140		2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	0.75	J	1.9	U	5.9		2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.3	U	7.9	U	7.8	U	8.1	U	7.4	U	9.3	U	7.4	U	7.6	U	80	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.3	U	7.9	U	7.8	U	8.1	U	7.4	U	9.3	U	7.4	U	7.6	U	139		8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.3	U	7.9	U	7.8	U	8.1	U	7.4	U	9.3	U	7.4	U	7.6	U	8	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.1	J	2	U	2	U	1.1	J	1.9	U	2.3	U	1.9	U	1.9	U	3.1	J-	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	UJ	4.7	U	3.7	UJ	3.8	UJ	4	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	21	U	20	U	20	U	20	U	19	U	23	U	19	U	19	U	20	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	21	U	20	U	20	U	20	U	19	U	23	U	19	U	19	U	20	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.2	U	4	U	3.9	U	4	U	3.7	U	4.7	U	3.7	U	3.8	U	4	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1	U	2	U	2	U	2	U	1.9	U	2.3	U	1.9	U	1.9	U	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	9.9	U	9.8	U	10	U	9.3	U	12	U	9.3	U	9.5	U	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	21	U	20	U	20	U	20	U	19	U	23	U	19	U	19	U	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	21	U	20	U	20	U	20	U	19	U	23	U	19	U	19	U	20	U	20	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/24/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19782	E1633DR	T	FC19782-23	LORNG_AA18MW-01_10212024	Perfluorononanesulfonic acid (PFNS)	0.81	J	0.81	J	IAG	NG/L
			FC19782-40	LORNG_JMW0301C_10182024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	UJ	LCL	NG/L
			FC19782-41	LORNG_MMW0330_10212024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
			FC19782-30	LORNG_OW05005_10172024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
			FC19782-42	LORNG_OW05006_10212024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	LCL	NG/L
			FC19782-38	LORNG_OW07001_10172024	Perfluorooctane sulfonamide (PFOSA)	3.1	J	3.1	J-	IDG	NG/L

Prepared by:AKN
Date:2/10/25
Checked by:TC for EDS Validatiopn Contractor
Date:2/247/25

DATA VALIDATION REPORT

Loring AFB

SDG: FC19898

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

5 Brilliant Avenue, Pittsburgh, PA 15215
412.408.3288 I www.eds-pa.com

ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC19898
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 10/22/2024 – 10/23/2024
Number of Samples: 27
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BSMW3S_10222024	FC19898-1	groundwater	S2BVM
LORNG_BW05014D_10222024	FC19898-2	groundwater	S2BVM
LORNG_BW05014I_10222024	FC19898-3	groundwater	S2BVM
LORNG_BW05014S_10222024	FC19898-4	groundwater	S2BVM
LORNG_BW06006_10222024	FC19898-5	groundwater	S2BVM
LORNG_BW16003_10222024	FC19898-6	groundwater	S2BVM
LORNG_BW19001_10222024	FC19898-7	groundwater	S2BVM
LORNG_BW01010S_10232024	FC19898-8	groundwater	S2BVM
LORNG_BW06009D_10232024	FC19898-9	groundwater	S2BVM
LORNG_EB043_10222024	FC19898-10	equipment blank	S2BVM
LORNG_EB044_10222024	FC19898-11	equipment blank	S2BVM
LORNG_EB045_10222024	FC19898-12	equipment blank	S2BVM
LORNG_JBW7742A_10232024	FC19898-13	groundwater	S2BVM
LORNG_OW16004_10222024	FC19898-14	groundwater	S2BVM
LORNG_BW01010D_10232024	FC19898-15	groundwater	S2BVM
LORNG_EB046_10232024	FC19898-16	equipment blank	S2BVM
LORNG_EB047_10232024	FC19898-17	equipment blank	S2BVM
LORNG_EB048_10232024	FC19898-18	equipment blank	S2BVM
LORNG_EB049_10232024	FC19898-19	equipment blank	S2BVM
LORNG_JMW8011_10222024	FC19898-20	groundwater	S2BVM
LORNG_JMW1565_10222024	FC19898-21	groundwater	S2BVM
LORNG_RFW1145_35_10232024	FC19898-22	groundwater	S2BVM
LORNG_RFW1145_75_10232024	FC19898-23	groundwater	S2BVM
LORNG_UNK-033_10232024	FC19898-24	groundwater	S2BVM
LORNG_WEST01_10232024	FC19898-25	groundwater	S2BVM
LORNG_OW19001_10232024	FC19898-26	groundwater	S2BVM
LORNG_JBW8004B_10222024	FC19898-27	groundwater	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems were found for this criterion with the following exceptions. PFOS was positively identified in two calibration blanks associated with the samples listed in the table below. Positive sample results reported for the impacted analyte in the associated samples have been evaluated and qualified as appropriate per validation guidance.

LORNG_BW06006_10222024	*LORNG_BW06009D_10232024*
LORNG_JBW7742A_10232024	*LORNG_BW05014I_10222024*
LORNG_OW16004_10222024	*LORNG_BW05014S_10222024*
LORNG_BW01010D_10232024	*LORNG_BW16003_10222024*
LORNG_BW05014D_10222024	*LORNG_BW19001_10222024*
LORNG_BW01010S_10232024	*LORNG_BW06009D_10232024*

C) Field/Equipment blank contamination:

Sample LORNG_EB043_10222024 was submitted as an equipment blank in association with samples LORNG_BW05014D_10222024, LORNG_BW05014I_10222024, and LORNG_BW05014S_10222024. No problems requiring qualification of sample results were found for this criterion.

Sample LORNG_EB044_10222024 was submitted as an equipment blank in association with samples LORNG_JMW1565_10222024, LORNG_BW16003_10222024, and LORNG_OW16004_10222024. No problems were found for this criterion.

Sample LORNG_EB045_10222024 was submitted as an equipment blank in association with samples LORNG_BW06006_10222024 and LORNG_BW19001_10222024. No problems were found for this criterion with the following exception. PFOS was positively identified. Positive sample results reported for the impacted analyte in the associated samples have been evaluated and qualified as appropriate per validation guidance.

Sample LORNG_EB046_10232024 was submitted as an equipment blank in association with samples LORNG_OW19001_10232024 and LORNG_WEST01_10232024. No problems were found for this criterion.

Sample LORNG_EB047_10232024 was submitted as an equipment blank in association with samples LORNG_RFW1145_35_10232024 and LORNG_RFW1145_75_10232024. No problems were found for this criterion.

Sample LORNG_EB048_10232024 was submitted as an equipment blank in association with samples LORNG_UNK-033_10232024 and LORNG_JBW7742A_10232024. No problems were found for this criterion.

Sample LORNG_EB049_10232024 was submitted as an equipment blank in association with samples LORNG_BW01010S_10232024 and LORNG_BW01010D_10232024. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems requiring result qualification were found for this criterion with the following exceptions.

The observed isotope dilution standard recovery for 13C3-PFBS was greater than the upper acceptance limit during the analysis of sample LORNG_BW05014D_10222024. The results reported for the associated target analytes in the impacted sample have been qualified "J-" on this basis.

The observed isotope dilution standard recovery for 13C4-PFBA was extremely low (less than 10%) during the analysis of sample LORNG_BW05014I_10222024. The result reported for the impacted analyte in the associated sample has been qualified rejected "R" on this basis.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified with the following exceptions.

The transition mass ratios were outside the established ratio limits for PFDA during the analyses of samples LORNG_JMW8011_10222024 and LORNG_RFW1145_35_10232024 indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

The transition mass ratios were outside the established ratio limits for PFns during the analyses of the samples listed in the table below indicating some degree of uncertainty in the qualitative identification of the analyte. The impacted results have been qualified "J" on this basis.

LORNG_JMW8011_10222024	*LORNG_UNK-033_10232024*
LORNG_BSMW3S_10222024	*LORNG_JBW8004B_10222024*

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample LORNG_JMW8011_10222024 was submitted for MS/MSD evaluation in association with this sample delivery group (SDG). Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No sample were submitted as a field duplicate pair in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion with the following exception. The recovery for NEtFOSAA was less than the lowest acceptance limit in the low level LCS associated with the samples listed in the table below. The results reported for the impacted analyte in the associated samples have been qualified "J-" or "UJ" as appropriate on this basis.

LORNG_EB043_10222024	*LORNG_BW05014D_10222024*
LORNG_EB044_10222024	*LORNG_BW01010S_10232024*
LORNG_EB045_10222024	*LORNG_BW06009D_10232024*
LORNG_BW06006_10222024	*LORNG_BW05014I_10222024*
LORNG_JBW7742A_10232024	*LORNG_BW05014S_10222024*
LORNG_OW16004_10222024	*LORNG_BW16003_10222024*
LORNG_BW01010D_10232024	*LORNG_BW19001_10222024*

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results or bring analyte concentration into the instrument's linear calibration range.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks			x
Field Blanks			x
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards		x	x
Non-Extracted Internal Standards	x		
Compound Identification			x
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	x		
Laboratory Control Sample			x
Other Quality Control Data out of Specification	x		
Field Duplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
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Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/31/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC19898

LAB: SGS Orlando

Samples Collected: 10/22/2024 – 10/23/2024

27 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 10/25 at <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

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Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 10/22/2024 – 10/23/2024
Extracted 11/11
Analyzed 12/03; 12/05; 12/06 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok except

LORNG_BW05014D_10222024 FC19898-2
13C3-PFBS ↑ runs 1 and 2 flag J-
13C3-HFPO-DA ↑ run 1 associated reported from run 2

LORNG_BW05014I_10222024 FC19898-3
13C4-PFBA <10% runs 1 and 2 flag R (not X per project QAPP)

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6377-LLBS NEtFOSAA ↓ flag UJ flag J- or UJ
Associated with samples 2,3,4,5,6,7,8,9,10,11,12,13,14,15
LORNG_EB043_10222024
LORNG_EB044_10222024
LORNG_EB045_10222024
LORNG_BW06006_10222024
LORNG_JBW7742A_10232024
LORNG_OW16004_10222024
LORNG_BW01010D_10232024
LORNG_BW05014D_10222024
LORNG_BW01010S_10232024
LORNG_BW06009D_10232024
LORNG_BW05014I_10222024
LORNG_BW05014S_10222024
LORNG_BW16003_10222024
LORNG_BW19001_10222024

OP6378-LLBS ok

OP6377-BS ok
OP6279-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:

LORNG_JMW8011_10222024	**FC19898-20**		**MS/MSD**	
Analyte	**MS**	**MSD**	**RPD**	**flag**
PFHxA	↑	**OK**	**OK**	**inconclusive; no action**
PFHxS	**ok; 4X rule**			
PFOS	**ok; 4x rule**			
PFDS	**ok**	↓	**ok**	**inconclusive; no action**

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs

LORNG_EB043_10222024
Associated with
LORNG_BW05014D_10222024
LORNG_BW05014I_10222024
LORNG_BW05014S_10222024

PFOS 2.0 J ng/L all results >5X; no action

LORNG_EB044_10222024
Associated with
LORNG_JMW1565_10222024
LORNG_BW16003_10222024
LORNG_OW16004_10222024
All ND

LORNG_EB045_10222024
Associated with
LORNG_BW06006_10222024
LORNG_BW19001_10222024
PFOS 0.87 J ng/L result > LOD but < LOQ flag U at sample result

LORNG_EB046_10232024
Associated with
LORNG_OW19001_10232024
LORNG_WEST01_10232024
All ND

LORNG_EB047_10232024
Associated with
LORNG_RFW1145_35_10232024
LORNG_RFW1145_75_10232024
All ND

LORNG_EB048_10232024
Associated with
LORNG_UNK-033_10232024
LORNG_JBW7742A_10232024
All ND

LORNG_EB049_10232024
Associated with
LORNG_BW01010S_10232024
LORNG_BW01010D_10232024
All ND

OP6377-MB all ND
OP6378-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS4T

12/03/24 all %RSD <20%

S4T7-IBLK 4T538.D 12/03/24 13:36 n/a Instrument Blank
PFOS 0.00069 J ug/L results >LOD but <LOQ flag U at sample result
S4T7-ICV7 4T539.D 12/03/24 13:50 n/a Initial cal verification 20
S4T7-CC7 4T540.D 12/03/24 14:06 n/a Continuing cal 4
S4T7-CC7 4T541.D 12/03/24 14:20 n/a Continuing cal 1LL

S4T7-CC7 4T563.D 12/03/24 19:48 n/a Continuing cal 4
S4T7-ICCB 4T564.D 12/03/24 20:03 n/a Continuing Calibration Blank

Samples 2,3,4,5,7,8,9,10,11

S4T7-CC7 4T575.D 12/03/24 22:43 n/a Continuing cal 4
S4T7-ICCB 4T576.D 12/03/24 22:57 n/a Continuing Calibration Blank

Samples 12,13,14,15

S4T7-CC7 4T581.D 12/04/24 00:10 n/a Continuing cal 4

LORNG_BW06006_10222024
LORNG_JBW7742A_10232024
LORNG_OW16004_10222024
LORNG_BW01010D_10232024
LORNG_BW05014D_10222024
LORNG_BW01010S_10232024
LORNG_BW06009D_10232024
LORNG_BW05014I_10222024
LORNG_BW05014S_10222024
LORNG_BW16003_10222024
LORNG_BW19001_10222024

Instrument GCMS4T

12/05/24 all %RSD <20%

S4T9-IBLK 4T637.D 12/05/24 14:14 n/a Instrument Blank
PFOS 0.0011 J ug/L results >LOD but <LOQ flag U at sample result
S4T9-ICV9 4T638.D 12/05/24 14:29 n/a Initial cal verification 20
S4T9-CC9 4T639.D 12/05/24 14:46 n/a Continuing cal 4

Samples 2,3,5,**6**

S4T9-CC9 4T647.D 12/05/24 16:42 n/a Continuing cal 4

Instrument GCMS9Q

12/05/24 all %RSD <20%

S9Q39-IBLK 9Q2575.D 12/05/24 14:37 n/a Instrument Blank
S9Q39-ICV39 9Q2576.D 12/05/24 14:52 n/a Initial cal verification 4
S9Q39-ICV39 9Q2577.D 12/05/24 15:07 n/a Initial cal verification 20

S9Q39-CC39 9Q2579.D 12/05/24 15:36 n/a Continuing cal 1.0LL

S9Q39-CC39 9Q2590.D 12/05/24 18:18 n/a Continuing cal 4
S9Q39-ICCB 9Q2591.D 12/05/24 18:33 n/a Continuing Calibration Blank

Samples 1,16,17,18,19

S9Q39-CC39 9Q2602.D 12/05/24 21:15 n/a Continuing cal 4
S9Q39-ICCB 9Q2603.D 12/05/24 21:29 n/a Continuing Calibration Blank

Sample 20,21,22,23

S9Q39-CC39 9Q2614.D 12/06/24 00:11 n/a Continuing cal 4
S9Q39-ICCB 9Q2615.D 12/06/24 00:26 n/a Continuing Calibration Blank

Samples 24,25,26,27

S9Q39-ECC39 9Q2621.D 12/06/24 01:54 n/a Ending cal 4
S9Q39-ICCB 9Q2622.D 12/06/24 02:09 n/a Continuing Calibration Blank

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_JMW8011_10222024	FC19898-20	PFDA	flag J
		PFNS	flag J
LORNG_RFW1145_35_10232024	FC19898-22	PFDA	flag J
LORNG_BSMW3S_10222024	FC19898-1	PFNS	flag J
LORNG_UNK-033_10232024	FC19898-24	PFNS	flag J
LORNG_JBW8004B_10222024	FC19898-27	PFNS	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

none

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

| | | |

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG										
			Location	FIELDQC				FIELDQC					
			Sample Date	10/22/2024				10/23/2024					
			Sample ID	LORNG_EB044_10222024		LORNG_EB045_10222024		LORNG_EB046_10232024		LORNG_EB047_10232024		LORNG_EB048_10232024		LORNG_EB049_10232024	
			QC Code	EB		EB		EB		EB		EB		EB	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	0.89	U	0.92	U	0.92	U	0.95	U	0.95	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	0.87	J	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.1	U	7.3	U	7.3	U	7.6	U	7.6	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.1	U	7.3	U	7.3	U	7.6	U	7.6	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.1	U	7.3	U	7.3	U	7.6	U	7.6	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	UJ	3.6	UJ	3.7	U	3.7	U	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	18	U	18	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	18	U	18	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		11-Chlorohexadecafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.6	U	3.7	U	3.7	U	3.8	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	8.9	U	9.2	U	9.2	U	9.5	U	9.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	18	U	18	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	18	U	18	U	19	U	19	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Subcontractor
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19898									
			Location	JBW7742A		JBW8004B		JMW1565		JMW8011		OW16004		OW19001	
			Sample Date	10/23/2024		10/22/2024		10/22/2024		10/22/2024		10/22/2024		10/23/2024	
			Sample ID	LORNG_JBW7742A_10232024		LORNG_JBW8004B_10222024		LORNG_JMW1565_10222024		LORNG_JMW8011_10222024		LORNG_OW16004_10222024		LORNG_OW19001_10232024	
			QC Code	N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	33	U	53		203		49.2		4.3	U	4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	17	U	150		612		142		2.1	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	5	J	311		411		289		0.53	J	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	17	U	100		170		95.6		2.1	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	8.3	U	268		124		268		0.61	J	0.99	U
		Perfluorononanoic acid (PFNA)	NG/L	17	U	20		13.2		19.1		2.1	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	17	U	1.9	J	2.5	U	1.8	J	2.1	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	17	U	36.4		50.8		34.4		0.98	J	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	33	U	56.3		45.4		51		4.3	U	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.6	J	1460		283		1440		7.6		2.9	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	17	U	34.8		5.4		35.3		2.1	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	17	U	1470		125		1510		5.2		2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	17	U	5.4	J	2.5	U	4.9		2.1	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	17	U	0.64	J	2.5	U	1.8	U	2.1	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	67	U	7.4	U	4.7	J	7.3	U	8.5	U	7.9	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	110	J	112		48		112		8.5	U	7.9	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	67	U	41.7		10	U	37.7		8.5	U	7.9	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	17	U	32.2		2.9	J	35.8		2.1	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	33	UJ	3.7	U	5	U	3.7	U	4.3	UJ	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	170	U	19	U	25	U	18	U	21	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	170	U	19	U	25	U	18	U	21	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		11-Chlorohexadecafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	33	U	3.7	U	5	U	3.7	U	4.3	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	17	U	1.9	U	2.5	U	1.8	U	2.1	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	83	U	9.3	U	13	U	9.2	U	11	U	9.9	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	170	U	19	U	25	U	18	U	21	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	170	U	19	U	25	U	18	U	21	U	20	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Subcontractor
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19898								FC20141			
			Location	RFW1145				UNK-033		WEST01		BW05011D		FIELDQC	
			Sample Date	10/23/2024				10/23/2024		10/23/2024		11/4/2024		11/4/2024	
			Sample ID	LORNG_RFW1145_35_10232024		LORNG_RFW1145_75_10232024		LORNG_UNK-033_10232024		LORNG_WEST01_10232024		LORNG_BW05011D_11042024		LORNG_EB050_11042024	
			QC Code	N		N		N		N		N		EB	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	23.3		12.8	J	9.3	J	19.4		3.8	U	3.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	63.6		32.2		20.8		56.6		1.9	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	154		49.4		25.8		57.1		1.9	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	38.8		16.7		11.5		15.1		1.9	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	201		59		20.2		18.6		0.95	U	0.98	U
		Perfluorononanoic acid (PFNA)	NG/L	4.2		2.2	J	4.3	J	2.2	U	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.87	J	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	16.6		5.8		17.6		32.2		1.9	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	24.4		7.6		29		27.8		3.8	U	3.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	765		219		230		102		1.9	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	17.7		5.1	J	14.3		3.7	J	1.9	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	656		204		377		4.7		1.9	U	1.9	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.75	J	2.7	U	1.3	J	2.2	U	1.9	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	11	U	9.3	U	9	U	7.6	U	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	67		15.3	J	9.3	U	9	U	7.6	U	7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	21.8		6.3	J	9.3	U	9	U	7.6	U	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	9.6		2.8	J	2.3	U	2.2	U	1.9	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	27	U	23	U	22	U	19	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	27	U	23	U	22	U	19	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	5.5	U	4.7	U	4.5	U	3.8	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	2.7	U	2.3	U	2.2	U	1.9	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	14	U	12	U	11	U	9.5	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	27	U	23	U	22	U	19	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	27	U	23	U	22	U	19	U	20	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Subcontractor
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19898	E1633DR	T	FC19898-1	LORNG_BSMW3S_10222024	Perfluorononanesulfonic acid (PFNS)	1.2	J	1.2	J	IAG	NG/L
			FC19898-15	LORNG_BW01010D_10232024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.2	J	3.2	J-	LCL	NG/L
	E1633DR	T	FC19898-8	LORNG_BW01010S_10232024	Perfluorooctanesulfonic acid (PFOS)	2.2	J	2.7	U	CBL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.5	U	5.5	UJ	LCL	NG/L
			FC19898-2	LORNG_BW05014D_10222024	Perfluorobutanesulfonic acid (PFBS)	7.5	=	7.5	J-	IDG	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
			FC19898-3	LORNG_BW05014I_10222024	Perfluorobutanoic acid (PFBA)	3.6	U	3.6	R	IDG	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	LCL	NG/L
			FC19898-4	LORNG_BW05014S_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	LCL	NG/L
			FC19898-5	LORNG_BW06006_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	UJ	LCL	NG/L
			FC19898-9	LORNG_BW06009D_10232024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
	E1633DR	T	FC19898-6	LORNG_BW16003_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	UJ	LCL	NG/L
			FC19898-7	LORNG_BW19001_10222024	Perfluorooctanesulfonic acid (PFOS)	2.5	J	2.5	U	FBL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	UJ	LCL	NG/L
			FC19898-10	LORNG_EB043_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
			FC19898-11	LORNG_EB044_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	LCL	NG/L
			FC19898-12	LORNG_EB045_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	LCL	NG/L
			FC19898-13	LORNG_JBW7742A_10232024	Perfluorooctanesulfonic acid (PFOS)	14.8	J	17	U	CBL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	33	U	33	UJ	LCL	NG/L
			FC19898-27	LORNG_JBW8004B_10222024	Perfluorononanesulfonic acid (PFNS)	5.4	=	5.4	J	IAG	NG/L
			FC19898-20	LORNG_JMW8011_10222024	Perfluorodecanoic acid (PFDA)	1.8	J	1.8	J	IAG	NG/L
	E1633DR	T	FC19898-14	LORNG_OW16004_10222024	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	UJ	LCL	NG/L
			FC19898-22	LORNG_RFW1145_35_10232024	Perfluorodecanoic acid (PFDA)	0.87	J	0.87	J	IAG	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.75	J	0.75	J	IAG	NG/L
			FC19898-24	LORNG_UNK-033_10232024	Perfluorononanesulfonic acid (PFNS)	1.3	J	1.3	J	IAG	NG/L

Prepared by:AKN
Date:2/10/25
Checked by:TC for EDS Validation Contractor
Date: 2/24/25

ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Loring AFB

SDG: FC20141

Chemical Analyses Performed by:

SGS Orlando

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

WSP USA Environment & Infrastructure

February 07, 2025

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ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Group: FC20141
Laboratory: SGS Orlando
Site: Loring AFB
Sampling dates: 11/04/2024
Number of Samples: 2
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Draft TO 1048 Quality Program Plan, September 2023 (QAPP).

Validation Guidelines: United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019; United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
LORNG_BW05011D_11042024	FC20141-1	groundwater	S2BVM
LORNG_EB050_11042024	FC20141-2	equipment blank	S2BVM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with “R”, rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an “R” flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The sample arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCV). The validator has determined that the low level CCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion.

B) Instrument blank contamination:

No problems requiring qualification of sample results were found for this criterion.

C) Field/Equipment blank contamination:

Sample LORNG_EB050_11042024 was submitted as an equipment blank in association with sample in this sample delivery group (SDG). No problems requiring qualification of sample results were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed standard recoveries within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Ion ratios were verified as part of the Level 2B data validation. No anomalies were identified.

Additional target compound identification criterion was not verified as part of the Level 2B data validation.

9. COMPOUND QUANTIFICATION

Target compound quantitation was not verified as part of the Level 2B data validation.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY / MATRIX DUPLICATE

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

No sample was submitted for MS/MSD evaluation in association with this SDG.

11. FIELD DUPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD), shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No sample were submitted as a field duplicate pair in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

No problems were found for this criterion.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed as necessary to confirm results.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

15. OTHER

None.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks	x		
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check	x		
Extracted Internal Standards	x		
Non-Extracted Internal Standards	x		
Compound Identification	x		
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate	NA		
Laboratory Control Sample	x		
Other Quality Control Data out of Specification	x		
Field Duplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	**The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.**
J	**The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.**
J+	**The result is an estimated quantity, but the result may be biased high.**
J-	**The result is an estimated quantity, but the result may be biased low.**
UJ	**The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.**
R	**The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.**

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA, Gen X
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA, PFBS
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
ABG	BLANK: AMBIENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
ABL	BLANK: AMBIENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CBH	CALIBRATION: CONTINUING CALIBRATION BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
CBL	BLANK: CONTINUING CALIBRATION BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
CCA	MISCELLANEOUS: COMPOUNDS WERE REPORTED COMBINED ON ONE COLUMN
CCL	CALIBRATION: CONTINUING CALIBRATION RECOVERY LESS THAN THE LOWER CONTROL LIMIT
CF	CONFIRMATION: CONFIRMATION RESULT
CFD	CONFIRMATION: CONFIRMATION PRECISION EXCEEDED
CFHD	CONFIRMATION: CONFIRMATION RESULT RPD GREATER THAN THE UPPER CONTROL LIMIT
CLS	CALIBRATION: NO CALIBRATION ANALYZED IN THE ANALYTICAL BATCH
CRL	CALIBRATION: RESULT BELOW THE CALIBRATION RANGE
CRR	CALIBRATION: LAB R FLAG REMOVED - CALIBRATION RANGE EXCEEDED
CVES	CALIBRATION: CALIBRATION VERIFICATION ENDING STANDARD EXCEEDED %D CRITERIA
CVHL	CALIBRATION: CONTINUING CALIBRATION RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
D	DUPLICATES: DUPLICATE RUN
DL	DILUTION: DILUTION
DS	DILUTION: SERIAL DILUTION %D EXCEEDED CONTROL LIMIT
DUNC	DETECTION LEVEL NOT MET UNCERTAINTY GREATER THAN MDL OR MDC
EBG	BLANK: EQUIPMENT BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
EBL	BLANK: EQUIPMENT BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
EISH	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
EISL	EXTRACTED INTERNALSTANDARD: EXTRACTED INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT
EMPC	MATRIX: ESTIMATED MAXIMUM POSSIBLE CONCENTRATION
EXC	MISCELLANEOUS: DATA NOT USED; ANOTHER VALUE IS APPROPRIATE OR DATA WAS NOT REQUESTED
FBG	BLANK: FIELD BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
FBL	BLANK: FIELD BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
FDD	DUPLICATES: FIELD DUPLICATE RPD CRITERIA EXCEEDED
FTD	FIELD TRIPLICATE RSD CRITERIA EXCEEDED
HAHL	HOLDINGTIME: EXTRACTION TO ANALYSIS HOLDING TIME EXCEEDED
HHL	HOLDINGTIME: SAMPLING TO ANALYSIS HOLDING TIME EXCEEDED
HPHL	HOLDINGTIME: SAMPLING TO EXTRACTION HOLDING TIME EXCEEDED
IAG	ION ABUNDANCE RATIO OUTSIDE CALCULATED LIMITS
IC2	CALIBRATION: EXCEEDS RSD CRITERIA AND INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICA	ABSOLUTE VALUE OF CONCENTRATION FOR ALL NON-SPIKED PROJECT ANALYTES >DL FOR SAMPLES CONTAINING INTERFERING ELEMENTS
ICD	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED
ICE	CALIBRATION: RESULT GREATER THAN LINEAR CALIBRATION RANGE
ICL	CALIBRATION: INITIAL CALIBRATION LOW STD. GREATER THAN THE REPORTING LIMIT
ICP	CALIBRATION: INITIAL CALIBRATION RSD EXCEEDED FOR CONFIRMATION COLUMN
ICR2	CALIBRATION: INITIAL CALIBRATION EXCEEDED THE R2 FOR FIRST ORDER REGRESSION
ICS	CALIBRATION: INDUCTIVELY COUPLED PLASMA (ICP) AND/OR ICP MASS SPECTROSCOPY (ICPMS) INTERFERENCE CHECK SAMPLE (ICS) SOLUTIONS A AND B (ICS A/B) RECOVERIES ARE OUTSIDE CONTROL LIMITS.
IDG	ISOTOPE DILUTION ANALYTE RECOVERY OUTSIDE ACCEPTANCE CRITERIA
IMPR	IMPROPER SAMPLE PRESERVATION/HANDLING/COLLECTION
IRF	CALIBRATION: INITIAL CALIBRATION RELATIVE RESPONSE FACTOR BELOW THE LOWER CONTROL LIMIT
ISH	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE GREATER THAN THE UPPER CONTROL LIMIT
ISL	INTERNALSTANDARD: INTERNAL STANDARD RESPONSE LESS THAN THE LOWER CONTROL LIMIT

EXHIBIT 5 - Attachment 1
ERPIMS Reason Codes Valid Values
Data Validation Services
PFAS Remedial Investigation
Former Loring Air Force Base
Limestone, Maine

CODE	NAME
IVD	CALIBRATION: EXCEEDS ICVS %D CRITERIA
IVS	CALIBRATION: INITIAL CALIBRATION VERIFICATION STANDARD WAS NOT ANALYZED
LBG	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE REPORTING LIMIT
LBL	BLANK: LABORATORY BLANK CONTAMINATION LESS THAN THE REPORTING LIMIT
LBM	BLANK: LABORATORY BLANK CONTAMINATION GREATER THAN THE METHOD DETECTION LIMIT
LCD	LABORATORYCONTROLSAMPLE: LCS RPD CRITERIA EXCEEDED
LCH	LABORATORYCONTROLSAMPLE: LCS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
LCL	LABORATORYCONTROLSAMPLE: LCS RECOVERY LESS THAN THE LOWER CONTROL LIMIT
LCS	LABORATORYCONTROLSAMPLE: NO LCS IN THE ANALYTICAL BATCH
LDD	DUPLICATES: LAB DUPLICATE RPD CRITERIA EXCEEDED
LDH	LABORATORYCONTROLSAMPLE: LCSD RPD CRITERIA EXCEEDED
LDS	LABORATORYCONTROLSAMPLE: LCSD NOT REQUIRED - NO FLAGS APPLIED
LRL	RL: RESULT LESS THAN THE REPORTING LIMIT
LTD	LAB TRIPLICATE RSD CRITERIA EXCEEDED
MBG	BLANK: MATERIAL BLANK CONCENTRATION EXCEEDS THE REPORTING LIMIT
MBL	BLANK: MATERIAL BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
MIF	MATRIX: MATRIX INAPPROPRIATELY FLAGGED
MS	MATRIX: GLOBAL MATRIX SPIKE FLAGGING
MSD	MATRIX: MATRIX SPIKE RPD CRITERIA EXCEEDED
MSH	MATRIX: MATRIX SPIKE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
MSL	MATRIX: MATRIX SPIKE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
PDSH	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY GREATER THAN THE UPPER CONTROL LIMIT.
PDSL	POST DIGESTION SPIKE RECOVERY: PDS RECOVERY LESS THAN THE LOWER CONTROL LIMIT.
PJ	PROFESSIONAL JUDGEMENT
RE	RE-ANALYSIS: RE-EXTRACTION AND/OR REANALYSIS
RFJ	MISCELLANEOUS: LAB F FLAG REPLACED WITH J - FLAGGING NOT VALID
RFL	LABORATORYCONTROLSAMPLE: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RHT	HOLDINGTIME: LAB R FLAG REMOVED - HOLDING TIME EXCEEDED BY LESS THAN 24 HOURS
RIS	INTERNALSTANDARD: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON IS
RLM	RL: REPORTING LIMIT LESS THAN THE METHOD DETECTION LIMIT
RML	MATRIX: LAB M FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
RMQ	MATRIX: LAB M FLAG REMOVED - MATRIX SPIKE/DUPLICATE NOT REQUESTED IN THIS ANALYTICAL BATCH
RPE	HOLDINGTIME: LAB R FLAG REMOVED - PE SAMPLE
RRA	BLANK: LAB B FLAG REMOVED - ANALYTE NOT DETECTED IN SAMPLE
RSG	SURROGATERECOVERY: LAB R FLAG REMOVED - REANALYSIS CONFIRMED MATRIX EFFECT ON SURROGATE
RSGQ	SURROGATERECOVERY: LAB R FLAG REMOVED - SURROGATE NOT MONITORED IN QAPP
RTO	CONFIRMATION: RESULT IS OUTSIDE THE METHOD SPECIFIED RETENTION TIME WINDOW
RXL	LABCONTROLLIMITS: LAB R FLAG REMOVED - RECOVERY WITHIN LAB CONTROL LIMITS
SCN	SCREENING: SCREENING METHOD
SDH	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA GREATER THAN THE UPPER CONTROL LIMIT
SDL	MATRIX: MATRIX SPIKE DUPLICATE RECOVERY CRITERIA LESS THAN THE LOWER CONTROL LIMIT
SGH	SURROGATERECOVERY: SURROGATE RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SGL	SURROGATERECOVERY: SURROGATE RECOVERY LESS THAN THE LOWER CONTROL LIMIT
SNL	SIGNAL-TO-NOISE RATIO LESS THAN 10:1 FOR IONS USED FOR QUANTITATION
SPRF	CALIBRATION: SPCC EXCEEDS RF > 0.300 CRITERIA
SVHL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY GREATER THAN THE UPPER CONTROL LIMIT
SVLL	CALIBRATION: SECOND SOURCE VERIFICATION STD. RECOVERY LESS THAN THE LOWER CONTROL LIMIT
TB	BLANK: TRIP BLANK
TBG	BLANK: TRIP BLANK CONCENTRATION GREATER THAN THE REPORTING LIMIT
TBL	BLANK: TRIP BLANK CONCENTRATION LESS THAN THE REPORTING LIMIT
TH	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF HIGH BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TH8	BLANK: TEMPERATURE BLANK > 8 DEGREES C
TIC	TENTATIVELYIDENTIFIEDCOMPOUND: TENTATIVELY IDENTIFIED COMPOUND
TL	THE CHROMATOGRAM OF THIS SAMPLE INDICATES THE PRESENCE OF LOW BOILING PETROLEUM HYDROCARBONS NOT CONSISTENT WITH THE QUALITATIVE STANDARDS EMPLOYED FOR THIS METHOD
TR	RL: RESULT BETWEEN THE METHOD DETECTION LIMIT AND REPORTING LIMIT
TVP	PARTIAL RESULTS GREATER THAN TOTAL RESULTS, DIFFERENCE IS GREATER THAN ACCURACY UCL (UPPER CONTROL LIMIT)
XJV	DATA VALIDATION QUALIFIER REVISED FROM X TO J AFTER CONSULTATION WITH PROJECT TEAM.
XRV	DATA VALIDATION QUALIFIER REVISED FROM X TO R AFTER CONSULTATION WITH PROJECT TEAM.
XUJV	DATA VALIDATION QUALIFIER REVISED FROM X TO UJ AFTER CONSULTATION WITH PROJECT TEAM.

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table B-24; October 18, 2022

Validator: GAP

Reviewer: DM

Date Validated: 01/31/2025

Reviewed: 2/7/2025

Project: Loring AFB

SDG: FC20141

LAB: SGS Orlando

Samples Collected: 11/04/2024

2 aqueous

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 11/05 at <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 Table II. Sample Storage and Holding Time Requirements

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

Samples collected 11/04/2024
Extracted 11/15
Analyzed 11/18; 11/19 ok

Extracted Internal STANDARDS (EIS)

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; QSM 6.0 specified using lab derived limits with lower limits no less than 20%
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

EDS rules as Module 6 does not define all situations:

- **For EIS %R >200% J- positive results, no action on non-detects (per module 6)**
- **For EIS %Rs >lab limit J- positive results, no action on non-detects**
- **For EIS %Rs between lab limit; no action (per module 6)**
- **For EIS %Rs lower lab limit but >10%; J+ positive results, UJ non-detects**
- **For EIS %Rs <10% X positive and non-detected (per module 6)**

Per Loring QAPP:

Extracted Internal Standards	Preliminary in-house acceptance criteria of 20-150% to be used until in-house limits are generated and approved for project use. Lower limit of in-house acceptance criteria cannot be <20%

All ok

Non-Extracted Internal STANDARDS (NIS)

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

ok

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150% if lab limits have not been generated.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits to evaluate per Loring QAPP

OP6472-LLBS ok
OP6472-LLBS ok

OP6472-BS ok
OP6472-BS ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate per Loring QAPP; RPD 30%

MS/MSD Sample:
none

Matrix Duplicate:
none

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

Per Loring QAPP:

- Sample results with associated blank contamination will be qualified as follows:

Method Type	Blank Result	Sample Result	Action
PFAS, Organics, and Wet Chemistry	< LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ	≤ 2x blank: Qualify non-detect (U) at reported result. ≥ 2x-5x blank: J+
	≥ LOQ	< LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result < LOQ	Qualify non-detect (U) at reported result
		≥ LOQ and < blank result	Qualify non-detect (U) at reported result
		≥ LOQ and ≥ blank result	≤ 2x blank: Qualify non-detect (U) at reported result. 2x-5x blank: J+
Metals	≤ LOQ	≤ LOD and < 5x blank result	Qualify non-detect (U) at LOD.
		LOD < Sample Result ≤ LOQ and < 5x blank result	Qualify non-detect (U) at reported result.
		> LOQ	< 5x blank result; qualify estimated (J+)
	> LOQ	≤ LOD	Qualify non-detect (U) at LOD
		LOD < Sample Result ≤ LOQ	Qualify non-detect (U) at reported result
		> LOQ but < 5x blank result	Qualify estimated (J+)
		≥ 5x blank result	No qualification

FB/EBs

LORNG_EB050_11042024
Associated with sample in this SDG
PFOS 1.9 J ng/L ND; no action

OP6472-MB all ND
OP6472-MB all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ 1.0 minute between RTs of bile salt and PFOS
- ✓ Qualitative Identification Standard to confirm RTs

All acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

Instrument GCMS9Q

11/18/24 all %RSD <20%

S9Q29-IBLK 9Q1839.D 11/18/24 18:03 n/a Instrument Blank
NetFOSA 0.0014 J ug/L ND; no action
S9Q29-ICV29 9Q1840.D 11/18/24 18:18 n/a Initial cal verification 4
S9Q29-ICV29 9Q1841.D 11/18/24 18:32 n/a Initial cal verification 20
S9Q29-CC29 9Q1843.D 11/18/24 19:02 n/a Continuing cal 1.0LL

S9Q29-CC29 9Q1853.D 11/18/24 21:29 n/a Continuing cal 4
S9Q29-ICCB 9Q1854.D 11/18/24 21:44 n/a Continuing Calibration Blank

Samples 1 and 2

S9Q29-CC29 9Q1865.D 11/19/24 00:26 n/a Continuing cal 4

S9Q30-IBLK 9Q1906.D 11/19/24 14:37 n/a Instrument Blank
NetFOSA 0.0013 J ug/L
S9Q30-CC29 9Q1907.D 11/19/24 14:52 n/a Continuing cal 4
S9Q30-CC29 9Q1908.D 11/19/24 15:07 n/a Continuing cal 1.0LL

Sample 2 not reported

S9Q30-CC29 9Q1918.D 11/19/24 17:34 n/a Continuing cal 4

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

All ok except

LORNG_JMW8011_10222024	FC19898-20	PFDA	flag J
		PFNS	flag J
LORNG_RFW1145_35_10232024	FC19898-22	PFDA	flag J
LORNG_BSMW3S_10222024	FC19898-1	PFNS	flag J
LORNG_UNK-033_10232024	FC19898-24	PFNS	flag J
LORNG_JBW8004B_10222024	FC19898-27	PFNS	flag J

Use IAG reason code

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

Loring AFB QAPP for aqueous and solid samples:

Field Duplicate	≤30% RPD or the absolute difference between analyte concentrations <LOQ

none

SEE FIELD DUPLICATE WORKSHEET

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20141			
			Location	BW05011D		FIELDQC	
			Sample Date	11/4/2024		11/4/2024	
			Sample ID	LORNG_BW05011D_11042024		LORNG_EB050_11042024	
			QC Code	N		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	3.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.95	U	0.98	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	3.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.6	U	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.6	U	7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.6	U	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.5	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	20	U

Prepared by: AKN
Date: 2/10/25
Checked by:TC for EDS Validation Contractor
Date:2/25/25

QA LEVEL I - DATA VERIFICATION CHECKLIST

Project Name: Loring AFB
Project Number: US-EI-775361701
Reviewing Company: WSP USA Environment & Infrastructure Inc
Project Manager: Scott Calkin
Data Evaluator: Tige Cunningham
Data Evaluation Date: 3/27/2025
Laboratory: BV Lab,SGS, and Katahdin Analytical
Lab Job #: BV Lab: C4N6160. SGS Lab: FC18081, FC18771, FC18996, FC19134, FC19318, FC19717, FC19917, and FC20138. Katahdin Lab: SR5400

Matrix: ☒ Aqueous ☒ Soil ☐ Sediment ☐ Waste ☐ Air ☐ Other:

Analytical Methods: See Table 1.

Samples comprised of Influent and Effluent samples from the on-site granular activated carbon (GAC) treatment system and investigation derived waste (IDW) characterization soil samples from drilling activities in 2024. The IDW soil samples were collected to produce the waste profile for the waste hauler/Landfill facility accepting the soil waste.

Sample Information: See Table 1.

Data Qualification: No qualifications required. Table 2 has final results.

Work Plan or QAPP reference: TO 1048 Quality Program Plan Rev 1, April 2024

Data Validation Guidance: DoD QSM 5.4 Quality Control Limits and Laboratory Quality Control Limits

Chain of Custody (COC) and Sample Receipt	**YES**	**NO**	**NA**	**COMMENT**
a) COC complete and correct? (Project location, contacts, sample IDs, sample dates, field QC samples, analyses identified, et c.)	☒	☐		
b) COC documents release of custody (signed and dated)?	☒	☐		
c) Field QC types provided (note types)?	☐	☐	☒	
d) Did the cooler contents match the COC?	☒	☐		
e) Were samples received in good condition?	☒	☐		
f) Were cooler temperatures within control limits?	☒	☐		

Data Package Information	**YES**	**NO**	**NA**	**COMMENT**
a) Laboratory name and location documented?	☒	☐		
b) All samples on COC reported in data package?	☒	☐		
c) Requested analytical methods used?	☒	☐		
d) Requested analyte list reported?	☒	☐		
e) Requested units reported?	☒	☐	☐	
f) Did the laboratory define the qualifiers used?	☒	☐		
g) Data package contains all information necessary to complete the data quality review?	☒	☐		

Analytical Assessment	**YES**	**NO**	**NA**	**COMMENT**
a) Solid samples reported on a dry-weight basis?	☒	☐	☐	

Analytical Assessment	YES	NO	NA	COMMENT
b) Were solid samples percent moisture criteria acceptable?	☒	☐	☐	
c) Were sample dilutions noted?	☒	☐		
d) Were detected concentrations less than the QL qualified by the laboratory?	☒	☐		
e) All detected sample results within the calibrated range?	☒	☐		
f) Did the laboratory satisfy the requested sensitivity requirements?	☒	☐		

Laboratory Case Narrative	YES	NO	NA	COMMENT
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	☒	☐	☐	No qualifiers added for deficiencies identified by the laboratory

Sample Preservation and Holding Time	YES	NO	NA	COMMENT
a) Were samples properly preserved?	☒	☐		
b) Were holding times met for sample preparation and/or extraction?	☒	☐	☐	
c) Were holding times met for sample analysis?	☒	☐		

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates reported?	☐	☐	☒	
b) Was field duplicate RPD or absolute difference criteria acceptable?	☐	☐	☒	

Overall Evaluation	YES	NO	NA	COMMENTS
a) Any other technical problems that lead to data rejection identified by laboratory?	☐	☒		
b) Were data acceptable and usable, except where noted?	☒	☐		

Comments/Notes:

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 IDW Sampling Program

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C4N6160	IDW-EFF	LORNG_IDW-EFF08_07312024	ZWT426	7/31/2024	WT	N	40
		LORNG_IDW-EFF09_07312024	ZWT427	7/31/2024	WT	N	40
FC18081	IDW-EFF	LORNG_IDW-EFF10_08162024	FC18081-1	8/16/2024	WT	N	40
		LORNG_IDW-EFF11_08162024	FC18081-2	8/16/2024	WT	N	40
FC18771	IDW-EFF	LORNG_IDW-EFF12_09112024	FC18771-1	9/11/2024	WT	N	40
		LORNG_IDW-EFF13_09112024	FC18771-2	9/11/2024	WT	N	40
FC18996	IDW-EFF	LORNG_IDW-EFF14_09202024	FC18996-1	9/20/2024	WT	N	40
FC19134	IDW-EFF	LORNG_IDW-EFF15_09262024	FC19134-1	9/26/2024	WT	N	40
FC19318	SR_IDW	LORNG_SR_IDW-02_10012024	FC19318-1	10/1/2024	SD	N	40
FC19717	IDW-EFF	LORNG_IDW_EFF16_10182024BF	FC19717-1	10/18/2024	WT	N	40
FC19917	IDW-EFF	LORNG_IDW_EFF17_10252024	FC19917-1	10/25/2024	WT	N	40
FC20138	IDW-EFF	LORNG_IDW_EFF18_11042024	FC20138-1	11/4/2024	WT	N	40

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

SD = Soil IDW Sample; WT = Treatment System Sample

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:3/24/25

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 IDW Sampling Program

						Method Class	Metals		WetChem
						Analysis Method	SW6010C	SW7471B	A2540G
						Fraction	T	T	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	ParamCount	ParamCount
SR5400	SR_IDW	LORNG_SR_IDW_02-10012024_K	SR5400-1	10/1/2024	SD	N	7	1	1

Notes:

N = Normal Field Sample

SD = Soil Investigation Derived Waste

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:3/24/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19318	
			Location	SR_IDW	
			Sample Date	10/1/2024	
			Sample ID	LORNG_SR_IDW-02_10012024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0046	J
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0089	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0067	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0023	J
		Perfluorooctanoic acid (PFOA)	MG/KG	0.003	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.0038	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0038	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0038	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0038	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0038	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0038	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0011	J
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0038	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0058	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0038	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0071	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0038	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0038	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0038	U
		1H,1H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0095	U
		1H,1H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0095	U
		1H,1H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0095	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0038	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0038	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0038	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0038	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0038	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.019	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.019	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0076	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0076	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0038	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0038	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0076	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0095	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0095	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0038	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0095	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.048	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.048	U

Prepared by: AKN
Date: 2/27/25
Checked by:TLC
Date:3/24/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

		SDG	C4N6160		FC18081		FC18771		FC18996	FC19134	FC19717	FC19917	FC20138
		Location	IDW-EFF		IDW-EFF		IDW-EFF		IDW-EFF	IDW-EFF	IDW-EFF	IDW-EFF	IDW-EFF
		Sample Date	7/31/2024		8/16/2024		9/11/2024		9/20/2024	9/26/2024	10/18/2024	10/25/2024	11/4/2024
		Sample ID	LORNG_IDW-EFF08_07312024	LORNG_IDW-EFF09_07312024	LORNG_IDW-EFF10_08162024	LORNG_IDW-EFF11_08162024	LORNG_IDW-EFF12_09112024	LORNG_IDW-EFF13_09112024	LORNG_IDW-EFF14_09202024	LORNG_IDW-EFF15_09262024	LORNG_IDW_EFF16_10182024BF	LORNG_IDW_EFF17_10252024	LORNG_IDW_EFF18_11042024
		QC Code	N	N	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1.8 U	1.8 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		Perfluoropentanoic acid (PFPeA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorohexanoic acid (PFHxA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorooctanoic acid (PFOA)	NG/L	0.22 U	0.23 U	0.91 U	0.91 U	1 U	0.98 U	0.98 U	1 U	0.98 U	0.94 U	0.92 U
		Perfluorononanoic acid (PFNA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorodecanoic acid (PFDA)	NG/L	0.89 U	0.91 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	0.89 U	0.91 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	0.89 U	0.91 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	0.45 U	0.46 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.39 U	0.4 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	0.42 U	0.43 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.42 U	0.43 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.42 U	0.43 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.42 U	0.43 U	1.8 U	1.8 U	2 U	2 U	1.2 J	2.9 J	2 U	1.9 U	1.8 U
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.84 U	0.86 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	0.42 U	0.43 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	0.89 U	0.91 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	1.7 U	1.7 U	7.3 U	7.3 U	8 U	7.8 U	7.8 U	8 U	7.8 U	7.5 U	7.3 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	1.7 U	1.7 U	7.3 U	7.3 U	8 U	7.8 U	7.8 U	8 U	7.8 U	7.5 U	7.3 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	3.4 U	3.5 U	7.3 U	7.3 U	8 U	7.8 U	7.8 U	8 U	7.8 U	7.5 U	7.3 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.7	0.97 J	1.8 U	1.8 U	2 U	2 U	0.7 J	2 U	2 U	1.9 U	1.8 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	0.89 U	0.91 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	0.89 U	0.91 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	0.89 U	0.91 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	0.89 U	0.91 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	2.2 U	2.3 U	18 U	18 U	20 U	20 U	20 U	20 U	20 U	19 U	18 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	4.5 U	4.6 U	18 U	18 U	20 U	20 U	20 U	20 U	20 U	19 U	18 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	3.6 U	3.6 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.4 U	3.5 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.8 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	0.45 U	0.46 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	53 U	55 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	5.9 U	6 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	5.9 U	6 U	3.6 U	3.6 U	4 U	3.9 U	3.9 U	4 U	3.9 U	3.8 U	3.7 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.8 U	2.8 U	1.8 U	1.8 U	2 U	2 U	2 U	2 U	2 U	1.9 U	1.8 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	7.8 U	8 U	9.1 U	9.1 U	10 U	9.8 U	9.8 U	10 U	9.8 U	9.4 U	9.2 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	28 U	28 U	18 U	18 U	20 U	20 U	20 U	20 U	20 U	19 U	18 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	28 U	28 U	18 U	18 U	20 U	20 U	20 U	20 U	20 U	19 U	18 U

Prepared by: AKN
Date: 2/27/25
Checked by:TLC
Date:3/27/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	SR5400	
			Location	SR_IDW	
			Sample Date	10/1/2024	
			Sample ID	LORNG_SR_IDW_02-10012024_K	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
Metals	T	SILVER	MG/KG	0.078	JN
		ARSENIC	MG/KG	2.8	N
		BARIUM	MG/KG	94.2	
		CADMIUM	MG/KG	0.38	UN
		CHROMIUM, TOTAL	MG/KG	9.97	
		LEAD	MG/KG	0.5	U
		SELENIUM	MG/KG	1.5	
		MERCURY	MG/KG	0.03	U
WetChem	T	SOLIDS, PERCENT	PERCENT	55	

Prepared by: AKN
Date: 3/4/25
Checked by:TLC
Date:3/27/25

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JULY 24, 2024

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

United States Air Force, Civil Engineering Center
485 Quentin Roosevelt Rd, San Antonio, Texas 78226

Prepared by:

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July 24, 2024

Prepared by: Marie Bevier Date: 24 July 2024

Reviewed/Approved By: _____ Date: _____

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
%	percent
7:3 FTCA	3-perfluoroheptyl propanoic acid
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected one aqueous sample on 6 June 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to SGS North America Inc. (SGS), located in Orlando, Florida, where it was received on 7 June 2024 and assigned to job number FC16237. SGS analyzed the sample for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

The field sample identification (ID), sample collection date, and the laboratory sample ID are presented in Table 1.

Table 1: Field Sample Submitted to SGS

Field Sample ID	Collection Date and Time	Laboratory Sample ID
LORNG_RES07_06062024	**06/06/2024 07:45**	**FC16237-1**

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 4 validation on the sample reviewed in this report. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms and review of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;

- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J The reported result was an estimated value.

J+ The reported result was an estimated value with a positive bias.

J- The reported result was an estimated value with a negative bias.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

U The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.

UJ The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CVHL High CCV recovery.

IVD ICV recovery is outside of limits.

TR The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The sample was received at the laboratory under proper COC, intact, and at an average temperature less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the sample reviewed in this report may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The sample was extracted within the method-specified maximum holding time of 28 days from sample collection and the extract was analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

A mass calibration verification was performed before the ICAL associated with the analysis of the sample reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%, with the following exceptions:

- N-Methyl perfluorooctanesulfonamide (NMeFOSA [131%]), N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE [158%]), and N-ethyl perfluorooctanesulfonamidoethnaol (NEtFOSE [159%]) recoveries were high in the mid-level ICV associated with the analysis of sample LORNG_RES07_06062024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA, NMeFOSE, and NEtFOSE results from sample LORNG_RES07_06062024 because of the high ICV recoveries. (UJ, IVD)
- NMeFOSE and NEtFOSE recoveries were high at 153% and 159%, respectively, in the ICV associated with the analysis of the MS and MSD reported in the laboratory report. The MS and MSD were performed on an unrelated sample and WSP did not qualify any data based on the high ICV recoveries.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- 2H,2H,3H,3H-Perfluorooctanoic acid (131%) and 3-perfluoroheptyl propanoic acid (7:3 FTCA [137%, 136%)) recoveries were high in a CCVs associated with the analysis of the laboratory blank, LCS, and low-level LCS (LLCS) associated with the extraction of sample LORNG_RES07_06062024. The field sample was not associated with this CCV and WSP did not qualify any data based on the high CCV recoveries.

- 7:3 FTCA recoveries were high at 136% and 132% in CCVs bracketing the analysis of sample LORNG_RES07_06062024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected 7:3 FTCA result from sample LORNG_RES07_06062024 because of the high CCV recoveries. (UJ, CVHL)

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid.

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks associated with the sample reviewed in this report, with the following exceptions:

- N-Ethyl perfluorooctanesulfonamide (NEtFOSA) was detected at a concentration of 0.0012 micrograms per liter (µg/L) in the initial calibration blank associated with the analysis of sample LORNG_RES07_06062024. NEtFOSA was not detected in the sample and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at concentrations of 0.0010 µg/L and 0.0015 µg/L in instrument blanks associated with the analysis off sample LORNG_RES07_06062024. NEtFOSA was not detected in the sample and data usability is not adversely affected by the blank detections.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

SGS did not perform MS analyses on the sample reviewed in this report.

7.1.11 DUPLICATE PRECISION

SGS did not perform a duplicate analysis on the sample reviewed in this report.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field sample were within the QAPP-specified 20 to 150% interim limits.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.14 STAGE 4 VALIDATION

WSP performed Stage 4 validation on sample LORNG_RES07_06062024. Detected results met all identification criteria and reported results matched the raw data.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS' J qualifiers. (J, TR)

Data from the field sample are reported in nanograms per liter, while QC results are reported in µg/L. Spiked concentrations are correct and WSP did not qualify any data based on the unit mismatch.

8 FIELD DUPLICATE PRECISION

WSP did not collect a field duplicate with the sample reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 40 data records from the field sample during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- J: WSP J qualified 6 records (15%) because of detected concentrations less than the LOQ.
- UJ: WSP UJ qualified 4 records (10%) because of high ICV or CCV recoveries.

Data qualified during validation are summarized in Table 2.

10 REFERENCES

WSP, 2023. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, May.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDG FC16237

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC16237	RES07	LORNG_RES07_06062024	FC16237-1	6/6/2024	WP	N	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water
ParamCount = Number of target analytes reported

C:\Users\USTA726934\Downloads\New folder (8)\Table 1_ResGW_FC16237_2024-07-25_MLB

Prepared by:AKN
Date:7/25/24
Checked by: MLB
Date: 7/31/2024

Table 2 - Summary of Analytical Results
Data Usability Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDGs FC16237

			SDG	FC16237	
			Location	RES07	
			Sample Date	6/6/2024	
			Sample ID	LORNG_RES07_06062024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.5	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.59	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.4	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.3	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	10	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.49	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	UJ

Prepared by: AKN
Date: 7/25/24
Checked by: MLB
Date: 07/31/2024

Table 3
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
SDG FC16237

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16237	E1633DR	T	FC16237-1	LORNG_RES07_06062024	Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.59	J	0.59	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.49	J	0.49	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	U	19	UJ	CVHL	NG/L

Prepared by:AKN
Date:7/25/24
Checked by: MLB
Date: 7/31/2024

DATA VALIDATION REPORT

JUNE 2024 STORMWATER EVENT
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

NOVEMBER 3, 2024

DATA VALIDATION REPORT

JUNE 2024 STORMWATER EVENT
PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

United States Air Force, Civil Engineering Center
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November 3, 2024

Prepared by: Marie Bevier Date: 23 August 2024

Reviewed/Approved By: Chris Ricardi Date: 11/3/2024

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Table 4 Field Duplicate Summary
Table 5 Split Sample Comparison Summary

LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
4:2 FTS	1H,1H,2H,2H-perfluorohexane sulfonic acid
6:2 FTS	1H,1H, 2H, 2H-perfluorooctane sulfonic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDoA	perfluorododecanoic acid
PFDS	perfluorodecanesulfonic acid
PFPeS	perfluoropentanesulfonic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 39 surface water samples on 4 and 5 June 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to SGS North America Inc. (SGS), located in Orlando, Florida, where they were received on 6 and 7 June 2024 and assigned to job numbers FC16206 and FC16234. SGS analyzed the sample for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633. WSP also submitted a single sample to Bureau Veritas Canada, located in Mississauga, Ontario, Canada. The sample was received by the laboratory on 6 June 2024, assigned to job number C4H1011, and analyzed for PFAS using EPA Draft Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 4 validation on 10% of the samples reviewed in this report and Stage 2B validation on the remaining data. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms and review of the raw analytical data and Stage 2B is the same as Stage 4 except it does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- ICS signal to noise ratios;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;

- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

3.5 INTERLABORATORY SPLIT SAMPLES

Interlaboratory split samples are co-located samples that are sent to both the primary laboratory and to a secondary laboratory to confirm analytical precision between the two laboratories' results and comparability of results produced by the primary laboratory. Data from the split laboratory were not validated and no data are qualified based on interlaboratory split results. Results from the primary and split analyses are provided for comparative purposes only.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CVHL	High ISC or CCV recovery.
IAG	Ion abundance ratio is outside of limits.
IVD	ICV recovery is outside of limits.
MSD	Imprecision between M and MSD results.
MSH	High MS recovery. Result may be biased high.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The sample was received at the laboratory under proper COC, intact, and at an average temperature less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the sample reviewed in this report may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

A mass calibration verification was performed before the ICAL associated with the analysis of the sample reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%, with the following exceptions:

- N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE), and N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) recoveries were high at 170% and 158%, respectively, in the mid-level ICV associated with the analysis of samples LORNG_C1_ST_06042024, LORNG_C2_ST_06042024, LORNG_C2_ST_06042024FD, LORNG_C3_ST_06042024, LORNG_C3_ST_06042024FD, LORNG_ST07008_06042024, LORNG_ST13008_06042024, LORNG_ST13014_06042024, LORNG_ST13014_06042024FD, LORNG_ST13015_06042024, LORNG_ST16002_06042024, LORNG_ST16003_06042024, LORNG_ST16007_06042024,

LORNG_ST18013_06042024, LORNG_ST18013_06042024FD, LORNG_ST18014_06042024, LORNG_ST18016_06042024, LORNG_ST18017_06042024, and LORNG_ST21005_06042024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSE and NEtFOSE results from the associated samples because of the high ICV recoveries. (UJ, IVD)

- N-Methyl perfluorooctanesulfonamide (NMeFOSA [131%]), NMeFOSE (158%), and NEtFOSE (159%) recoveries were high in the mid-level ICV associated with the undiluted analysis of sample LORNG_ST12001_06052024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA, NMeFOSE, and NEtFOSE results from sample LORNG_ST12001_06052024 because of the high ICV recoveries. (UJ, IVD)
- NMeFOSE and NEtFOSE recoveries were high at 153% and 159%, respectively, in the mid-level CCV associated with the analysis of sample LORNG_ST21018_06052024 and the 1:10 dilution analysis of sample LORNG_ST12001_06052024. Data limitations are summarized below.
  - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSE and NEtFOSE results from sample LORNG_ST21018_06052024 because of the high ICV recoveries. (UJ, IVD)
  - NMeFOSE and NEtFOSE were not reported from the associated analysis of sample LORNG_ST12001_06052024 and data usability is not adversely affected by the high ICV recoveries.
- N-Ethyl perfluorooctanesulfonamide (NEtFOSA) recovery was low at 66% in the mid-level ICV associated with the 1:5 dilution analyses of samples LORNG_ST08003_06052024 and LORNG_ST12006_06052024, and the 1:10 dilution analyses of samples LORNG_ST13017_0605202 and LORNG_ST21016_06052024. NEtFOSA was not reported from the associated analyses and data usability is not adversely affected by the low ICV recovery.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits, with the following exception:

- Perfluorodecanesulfonic acid (PFDS) recovery was high at 133% in the ISC associated with the analysis of samples LORNG_C1_ST_06042024, LORNG_C2_ST_06042024, LORNG_C2_ST_06042024FD, LORNG_C3_ST_06042024, LORNG_C3_ST_06042024FD, LORNG_ST07008_06042024, LORNG_ST13008_06042024, LORNG_ST13014_06042024, LORNG_ST13014_06042024FD, LORNG_ST13015_06042024, LORNG_ST16002_06042024, LORNG_ST16003_06042024, LORNG_ST16007_06042024, LORNG_ST18013_06042024, LORNG_ST18013_06042024FD, LORNG_ST18014_06042024, LORNG_ST18016_06042024, LORNG_ST18017_06042024, and LORNG_ST21005_06042024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected PFDS results from the associated samples because of the high ISC recovery. (UJ, CVHL)

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- 1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS) recovery was high at 131% in a CCV associated with the analysis of samples LORNG_ST07008_06042024, LORNG_ST13008_06042024, LORNG_ST13014_06042024, LORNG_ST13014_06042024FD, LORNG_ST13015_06042024, LORNG_ST16003_06042024, and LORNG_ST21005_06042024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected 6:2 FTS results from the associated samples because of the high CCV recovery. (UJ, CVHL)
- 3-Perfluoroheptyl propanoic acid (7:3 FTCA) recoveries were high at 136% in CCVs bracketing the analysis of sample LORNG_ST12001_06052024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected 7:3 FTCA result from this sample because of the high CCV recoveries. (UJ, CVHL)

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks associated with the sample reviewed in this report, with the following exceptions:

- NEtFOSA was detected at concentrations of 0.0012 micrograms per liter (µg/L), 0.0010 µg/L and 0.0015 µg/L in instrument blanks associated with the analysis of samples LORNG_ST12001_06052024 and LORNG_ST21018_06052024. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the blank detections.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

SGS performed MS and MSD analyses on samples LORNG_C1_ST_06042024, LORNG_ST12001_06052024, and LORNG_ST21004_06052024. Recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between MS and MSD results were less than 30%, with the following exceptions:

- PFOS recovery was high at 210% in the MS performed on sample LORNG_C1_ST_06042024. Additionally, the RPD between MS and MSD results for PFOS was high at 35%. WSP J+ qualified the detected PFOS result from sample LORNG_C1_ST_06042024 because of the high MS recovery and imprecision between MS and MSD results. (J+, MSH, MSD)
- Perfluorohexanoicacid (39%, MS), perfluorohexanesulfonic acid (33%, -9%), perfluoroheptanesulfonic acid (9%, 32%), PFOS (-3,119%, 4,658%), perfluorononanesulfonic acid (-178%, -133%), and perfluorodecanesulfonic acid (169%, MSD) recoveries were outside of limits in the MS and/or MSD performed on sample LORNG_ST12001_06052024. Due to high target analyte concentrations, the MS and MSD were analyzed at 1:10 dilutions, which reduced the spike concentrations to less than the elevated LOQs. Per the DoD data validation guidelines, data should not be qualified based on MS recoveries when the spike concentrations are less than the LOQ due to sample dilution.
- 3-Perfluoropropyl propanoic acid (3:3 FTCA) recovery was high at 161% in the MSD performed on sample LORNG_ST21004_06052024. 3:3 FTCA was not detected in the unspiked native sample and data usability is not adversely affected by the high MSD recovery.

7.1.11 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field sample were within the laboratory-specified 20 to 180% limits for $^{13}C_2$-1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS), $^{13}C_2$-6:2 FTS, and $^{13}C_2$-1H,1H, 2H,2H-perfluorodecane sulfonic acid (8:2 FTS), or the QAPP-specified 20 to 150% interim limits for the remaining EISs, with the following exceptions:

- Recoveries of the EIS $^{13}C_2$-4:2 FTS were high in the undiluted analyses of samples LORNG_ST08003_06052024 and LORNG_ST12006_06052024 at 185% and 181%, respectively. SGS chose to report the 4:2 FTS result from the 1:5 dilutions, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.

- Recovery of the EIS $^{13}C_8$-perfluorooctanesulfonamide (PFOSA) was high at 156% in the undiluted analysis of sample LORNG_ST12001_06052024. SGS chose to report the PFOSA result from the 1:10 dilution, which exhibited acceptable EIS recovery, and data usability is not adversely affected by the high EIS recovery.
- Recoveries of the EIS $^{13}C_2$-4:2 FTS were high in the undiluted analyses of samples LORNG_ST21016_06052024 and LORNG_ST13017_06052024 at 239% and 210%, respectively. SGS chose to report the 4:2 FTS result from the 1:10 dilutions, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.

7.1.12 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.13 ION RATIOS

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV, with the following exceptions:

- Ion ratios for perfluorododecanoic acid (PFDoA) and PFOSA were high at 285% and 167%, respectively, in sample LORNG_ST12001_06052024. WSP J qualified the affected PFDoA and PFOSA results because the ion ratios were outside of limits. (J, IAG)
- The ion ratio for perfluorobutanesulfonic acid (PFBS) was high at 165% in sample LORNG_ST13008_06042024. WSP J qualified the affected PFBS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for perfluoropentanesulfonic acid (PFPeS) was high at 152% in sample LORNG_ST13014_06042024FD. WSP J qualified the affected PFPeS result because the ion ratio was outside of limits. (J, IAG)
- Ion ratios for PFOSA were high in samples LORNG_ST16002_06042024 (180%), LORNG_ST16007_06042024 (310%), LORNG_ST18016_06042024 (160%), and LORNG_ST21018_06052024 (188%). WSP J qualified the affected PFOSA results because the ion ratios were outside of limits. (J, IAG)

7.1.14 STAGE 4 VALIDATION

WSP performed Stage 4 validation on samples LORNG_C1_ST_06042024, LORNG_C2_ST_06042024, LORNG_ST16007_06042024, and LORNG_ST18014_06042024. Detected results met all identification criteria and reported results matched the raw data.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS' J qualifiers. (J, TR)

Data from the field sample are reported in nanograms per liter, while QC results are reported in µg/L. Spiked concentrations are correct and WSP did not qualify any data based on the unit mismatch.

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_C3_ST_06042024, LORNG_ST08001_06052024, LORNG_ST11003_06052024, LORNG_ST13014_06042024, and LORNG_ST18013_06042024. RPDs between primary and field duplicate results were less than the QAPP-specified maximum of 30% or differences between primary and duplicate results were les than the LOQ, indicating acceptable sampling and analytical precision. Results from the primary samples and their field duplicate are presented in Table 4.

9 INTERLABORATORY SPLIT PRECISION

Sample LORNG_ST16002_06042024 was analyzed both by SGS and Bureau Verita Canada as an interlaboratory split. RPDs between the primary and split results were less than 30%, indicating acceptable analytical precision and comparability between results from the primary and split laboratories.

Results from the primary and split samples are presented in Tabe 5.

10 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 1,560 data records from the field sample during this validation. Validated analytical results are presented in Table 2.

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- J: WSP J qualified 220 records (14%) because of ion ratios outside of limits and/or detected concentrations less than the LOQ.
- J+: WSP J+ qualified 1 record (0.06%) because of high MS recovery and imprecision between MS and MSD results.
- UJ: WSP UJ qualified 70 records (4.5%) because of high ICV or CCV recoveries.

Data qualified during validation are summarized in Table 3.

11 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC16206	C1	LORNG_C1_ST_06042024	FC16206-8	6/4/2024	WS	N	40
	C2	LORNG_C2_ST_06042024	FC16206-9	6/4/2024	WS	N	40
		LORNG_C2_ST_06042024FD	FC16206-13	6/4/2024	WS	FD	40
	C3	LORNG_C3_ST_06042024	FC16206-14	6/4/2024	WS	N	40
		LORNG_C3_ST_06042024FD	FC16206-15	6/4/2024	WS	FD	40
	ST07008	LORNG_ST07008_06042024	FC16206-21	6/4/2024	WS	N	40
	ST13008	LORNG_ST13008_06042024	FC16206-22	6/4/2024	WS	N	40
	ST13014	LORNG_ST13014_06042024	FC16206-23	6/4/2024	WS	N	40
		LORNG_ST13014_06042024FD	FC16206-24	6/4/2024	WS	FD	40
	ST13015	LORNG_ST13015_06042024	FC16206-25	6/4/2024	WS	N	40
	ST16002	LORNG_ST16002_06042024	FC16206-16	6/4/2024	WS	N	40
	ST16003	LORNG_ST16003_06042024	FC16206-26	6/4/2024	WS	N	40
	ST16007	LORNG_ST16007_06042024	FC16206-10	6/4/2024	WS	N	40
	ST18013	LORNG_ST18013_06042024	FC16206-17	6/4/2024	WS	N	40
		LORNG_ST18013_06042024FD	FC16206-18	6/4/2024	WS	FD	40
	ST18014	LORNG_ST18014_06042024	FC16206-11	6/4/2024	WS	N	40
	ST18016	LORNG_ST18016_06042024	FC16206-12	6/4/2024	WS	N	40
	ST18017	LORNG_ST18017_06042024	FC16206-19	6/4/2024	WS	N	40
	ST21005	LORNG_ST21005_06042024	FC16206-27	6/4/2024	WS	N	40
FC16234	ST07007	LORNG_ST07007_06052024	FC16234-13	6/5/2024	WS	N	40
	ST08001	LORNG_ST08001_06052024	FC16234-6	6/5/2024	WS	N	40
		LORNG_ST08001_06052024FD	FC16234-7	6/5/2024	WS	FD	40
	ST08003	LORNG_ST08003_06052024	FC16234-14	6/5/2024	WS	N	40
	ST08006	LORNG_ST08006_06052024	FC16234-8	6/5/2024	WS	N	40
	ST11003	LORNG_ST11003_06052024	FC16234-1	6/5/2024	WS	N	40
		LORNG_ST11003_06052024FD	FC16234-2	6/5/2024	WS	FD	40
	ST12001	LORNG_ST12001_06052024	FC16234-15	6/5/2024	WS	N	40
	ST12002	LORNG_ST12002_06052024	FC16234-3	6/5/2024	WS	N	40
	ST12006	LORNG_ST12006_06052024	FC16234-16	6/5/2024	WS	N	40
	ST13006	LORNG_ST13006_06052024	FC16234-9	6/5/2024	WS	N	40
	ST13017	LORNG_ST13017_06052024	FC16234-17	6/5/2024	WS	N	40
	ST13019	LORNG_ST13019_06052024	FC16234-10	6/5/2024	WS	N	40
	ST13020	LORNG_ST13020_06052024	FC16234-11	6/5/2024	WS	N	40
	ST13022	LORNG_ST13022_06052024	FC16234-18	6/5/2024	WS	N	40
	ST13023	LORNG_ST13023_06052024	FC16234-4	6/5/2024	WS	N	40
	ST21002	LORNG_ST21002_06052024	FC16234-19	6/5/2024	WS	N	40
	ST21004	LORNG_ST21004_06052024	FC16234-5	6/5/2024	WS	N	40
	ST21016	LORNG_ST21016_06052024	FC16234-12	6/5/2024	WS	N	40
	ST21018	LORNG_ST21018_06052024	FC16234-20	6/5/2024	WS	N	40

Notes:
N = Total
N = Normal Field Sample, FD = Field Duplicate
WS = Surface Water
ParamCount = Number of target analytes reported

Table 2 - Summary of Analytical Results
Data Validation Report
June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

		SDG	FC16206													FC16206					
		Location	C1	C2		C3		ST07008	ST13008	ST13014		ST13015	ST16002	ST16003	ST16007	ST18013		ST18014	ST18016	ST18017	ST21005
		Sample Date	6/4/2024	6/4/2024		6/4/2024		6/4/2024	6/4/2024	6/4/2024		6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024		6/4/2024	6/4/2024	6/4/2024	6/4/2024
		Sample ID	LORNG_C1_ST_06042024	LORNG_C2_ST_06042024	LORNG_C2_ST_06042024FD	LORNG_C3_ST_06042024	LORNG_C3_ST_06042024FD	LORNG_ST07008_06042024	LORNG_ST13008_06042024	LORNG_ST13014_06042024	LORNG_ST13014_06042024FD	LORNG_ST13015_06042024	LORNG_ST16002_06042024	LORNG_ST16003_06042024	LORNG_ST16007_06042024	LORNG_ST18013_06042024	LORNG_ST18013_06042024FD	LORNG_ST18014_06042024	LORNG_ST18016_06042024	LORNG_ST18017_06042024	LORNG_ST21005_06042024
		QC Code	N	N	FD	N	FD	N	N	N	FD	N	N	N	N	N	FD	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	18.4	11.4 J	10.5 J	16.9	16.8	6.5 J	8.5 J	78.6	74.7	6.6 J	4.7 J	6.8 J	4.8 J	4.6 J	5.5 J	4.5 J	4.3 J	3.3 J	5.3 J
		Perfluoropentanoic acid (PFPeA)	NG/L	8.5	11.4	8.8	49.1	52.6	5.8 J	5.5 J	11.8	12.2	8	5.2 J	7.1 J	4.9 J	5.8 J	6.2 J	4.6 J	4.6 J	3.2 J	8.9
		Perfluorohexanoic acid (PFHxA)	NG/L	6	7.7	7.8	54.6	57.7	5.2	5.1	6.6	7.9	7	6.3	7.5	7.1	7.4	7.7	6.8	6.5	3.4 J	7.7
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.4	5	5	22.9	24.1	3.2 J	3.6 J	6.4	6.5	4.7	5.3	8.1	4.8	4.7	4.4	3.4 J	4.3	2.6 J	9
		Perfluorooctanoic acid (PFOA)	NG/L	5	5.6	5.5	48.4	53.6	2.8 J	3.1 J	5.2	5.3	4.5	4.6	4.7	4	3.6 J	3.6	3.1 J	3.5 J	2.5 J	4.9
		Perfluorononanoic acid (PFNA)	NG/L	0.88 J	1.1 J	1.1 J	3.7	4	0.7 J	1.9 U	1.1 J	1 J	2 U	0.65 J	0.8 J	0.98 J	0.78 J	0.79 J	0.96 J	0.75 J	1.8 U	0.64 J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.8 U	1.8 U	0.72 J	0.56 J	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.5 J	1.4 J	1.9 J	8.5	9.8	1.3 J	1 J	0.97 J	1.3 J	1.8 J	1.5 J	1.1 J	1.8 J	2.5 J	2.5 J	3 J	1.8 J	0.92 J	0.87 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.6 J	2.1 J	1.8 J	10.1	11.1	3.9 U	1.3 J	1.6 J	1.3 J	1.8 J	1.8 J	1.3 J	2 J	4.4 J	3.6 J	3.7 J	2.4 J	1.6 J	3.6 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	22.4	27.1	27.5	194	206	14.2	21.6	22	21.6	21.5	27.3	20.3	29.3	46.5	46.6	49.5	32.9	22	17.8
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.3 J	0.58 J	0.81 J	6.6	6.3	0.49 J	1.9 U	0.71 J	1.3 J	0.95 J	0.81 J	1.9 U	1.4 J	1.8 J	1.5 J	1.7 J	0.67 J	0.86 J	1.8 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	56.9 J+	43	39.3	346	337	11.8	22.5	33.3	33.4	18.1	37	23.9	51.9	82.6	87.6	56.1	25.6	35	10
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.8 U	1.8 U	1.1 J	0.98 J	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	0.9 J	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9 UJ	1.8 UJ	1.8 UJ	1.8 UJ	1.8 UJ	2 UJ	1.9 UJ	1.9 UJ	2 UJ	2 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	1.8 UJ	1.8 UJ
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5 U	7.3 U	7.3 U	7.3 U	7.1 U	7.8 U	7.7 U	7.7 U	7.8 U	7.8 U	7.4 U	7.5 U	7.4 U	7.5 U	7.3 U	7.4 U	7.5 U	7.3 U	7.1 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5 U	7.3 U	7.3 U	59.6	70.9	7.8 UJ	7.7 UJ	7.7 UJ	7.8 UJ	7.8 UJ	7.4 U	7.5 UJ	7.4 U	7.5 U	7.3 U	7.4 U	7.5 U	7.3 U	7.1 UJ
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5 U	7.3 U	7.3 U	17.2 J	13.7 J	7.8 U	7.7 U	7.7 U	7.8 U	7.8 U	7.4 U	7.5 U	7.4 U	7.5 U	7.3 U	7.4 U	7.5 U	7.3 U	7.1 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.8 U	1.8 U	10.9	11.2	2 U	1.9 U	1.9 U	2 U	2 U	1 J	1.9 U	0.71 J	1.9 U	1.9 J	1.9 U	0.69 J	1.8 U	1.8 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19 UJ	18 UJ	18 UJ	18 UJ	18 UJ	20 UJ	19 UJ	19 UJ	20 UJ	20 UJ	19 UJ	19 UJ	19 UJ	19 UJ	18 UJ	19 UJ	19 UJ	18 UJ	18 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19 UJ	18 UJ	18 UJ	18 UJ	18 UJ	20 UJ	19 UJ	19 UJ	20 UJ	20 UJ	19 UJ	19 UJ	19 UJ	19 UJ	18 UJ	19 UJ	19 UJ	18 UJ	18 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8 U	3.6 U	3.6 U	3.6 U	3.6 U	3.9 U	3.8 U	3.8 U	3.9 U	3.9 U	3.7 U	3.8 U	3.7 U	3.8 U	3.6 U	3.7 U	3.8 U	3.6 U	3.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.9 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4 U	9.1 U	9.1 U	9.1 U	8.9 U	9.8 U	9.6 U	9.6 U	9.8 U	9.8 U	9.3 U	9.4 U	9.3 U	9.4 U	9.1 U	9.3 U	9.4 U	9.1 U	8.9 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19 U	18 U	18 U	18 U	18 U	20 U	19 U	19 U	20 U	20 U	19 U	19 U	19 U	19 U	18 U	19 U	19 U	18 U	18 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U	18 U	18 U	18 U	18 U	20 U	19 U	19 U	20 U	20 U	19 U	19 U	19 U	19 U	18 U	19 U	19 U	18 U	18 U

Notes:
N = Normal Field Sample
FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 8/23/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

		SDG	FC16234								FC16234											
		Location	ST07007	ST08001		ST08003	ST08006	ST11003		ST12001	ST12002	ST12006	ST13006	ST13017	ST13019	ST13020	ST13022	ST13023	ST21002	ST21004	ST21016	ST21018
		Sample Date	6/5/2024	6/5/2024		6/5/2024	6/5/2024	6/5/2024		6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024
		Sample ID	LORNG_ST07007_06052024	LORNG_ST08001_06052024	LORNG_ST08001_06052024FD	LORNG_ST08003_06052024	LORNG_ST08006_06052024	LORNG_ST11003_06052024	LORNG_ST11003_06052024FD	LORNG_ST12001_06052024	LORNG_ST12002_06052024	LORNG_ST12006_06052024	LORNG_ST13006_06052024	LORNG_ST13017_06052024	LORNG_ST13019_06052024	LORNG_ST13020_06052024	LORNG_ST13022_06052024	LORNG_ST13023_06052024	LORNG_ST21002_06052024	LORNG_ST21004_06052024	LORNG_ST21016_06052024	LORNG_ST21018_06052024
		QC Code	N	N	FD	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.2 J	5.3 J	5.5 J	17	2.6 J	9.8 J	8.8 J	25.8	4.3 J	12.7 J	14.7 J	11.5 J	5.2 J	6.9 J	7.2 J	4.5 J	12.4 J	9.7 J	18.5	10 J
		Perfluoropentanoic acid (PFPeA)	NG/L	4.2 J	9.6	9.9	46.6	1 J	5.3 J	4.9 J	89.1	2.5 J	24.9	32.7	9	4.4 J	1.2 J	6.6 J	5.6 J	14.5	11	4.9 J	17.6
		Perfluorohexanoic acid (PFHxA)	NG/L	3.8	12.2	12.3	56.5	2.4 J	15.2	13.6	115	2.6 J	21.9	23.9	25.3	3.8 J	1.4 J	6.9	4.4	12.9	8.9	3.9	14.5
		Perfluoroheptanoic acid (PFHpA)	NG/L	3 J	5.1	5	26.7	2.3 J	4.9	4.5	47.2	2.9 J	53	24.3	6	3.4 J	1.1 J	6.4	4 J	16.4	11.9	3.6 J	17.6
		Perfluorooctanoic acid (PFOA)	NG/L	3.1 J	11.8	12	53.2	2.1 J	6.8	5.9	60	2.4 J	22.7	14.9	7	3.1 J	1.1 J	6.1	3.6 J	8.6	6.4	2.6 J	9.2
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	0.7 J	0.6 J	3 J	1.9 U	0.6 J	0.64 J	5.3	1.9 U	3.2 J	2.9 J	1.9 U	1.9 U	1.9 U	1.6 J	2 U	1.3 J	0.8 J	1.9 U	1.1 J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	2.6 J	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.6 J	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1 J	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.1 J	2.5 J	2.3 J	9.7	0.8 J	12	10.2	24.3	1 J	0.86 J	2.9 J	4.8	0.93 J	1.9 U	1.9 J	1.3 J	1.3 J	1.2 J	0.87 J	1.2 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.4 J	3.6 J	3.3 J	14.5	3.7 U	18.8	15.3	34.3	3.8 U	1.4 J	5.6	4.4 J	1.2 J	3.7 U	2.2 J	1.5 J	1.8 J	1.3 J	3.8 U	1.8 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	13.5	64.5	65.1	185	20	137	120	324	15.4	13.9	50.4	41.9	13.5	5.7	23.4	16.4	22.5	17.8	2.1 J	24.8
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.57 J	1.4 J	1.4 J	7	1.9 U	5.1	4.2	49.2	1.9 U	0.76 J	2.7 J	0.7 J	0.6 J	1.9 U	0.75 J	0.56 J	0.91 J	0.49 J	1.9 U	0.61 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	9.4	32.6	33.3	206	15.6	83.3	69.5	4560	11.4	51.5	87.9	12.3	12.2	6.2	21	9	18.3	17.5	2.9 J	34.4
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	72.1	1.9 U	0.58 J	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	46.9	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	45	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3 U	7.5 U	7.8 U	36 U	7.4 U	7.8 U	7.8 U	5.4 J	7.5 U	38 U	8 U	74 U	7.8 U	7.4 U	8.3 U	8.2 U	8.1 U	7.5 U	76 U	7.3 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3 U	7.5 U	7.8 U	61	7.4 U	7.8 U	7.8 U	185	7.5 U	7.6 U	13 J	7.4 U	7.8 U	7.4 U	8.3 U	8.2 U	8.1 U	7.5 U	7.6 U	7.3 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3 U	7.5 U	7.8 U	7.6 J	7.4 U	7.8 U	7.8 U	118	7.5 U	12.8 J	8 U	7.4 U	7.8 U	7.4 U	8.3 U	8.2 U	8.1 U	7.5 U	7.6 U	7.3 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.8 J	2.2 J	7.9	0.98 J	2.8 J	2.4 J	38.1 J	1.1 J	0.74 J	2 U	1.5 J	1.9 U	1.9 U	2.1 U	2 U	1 J	1.9 U	1.9 U	1.1 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 UJ	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 U	19 U	19 U	18 U	19 U	20 U	20 U	19 UJ	19 U	19 U	20 U	19 U	19 U	19 U	21 U	20 U	20 U	19 U	19 U	18 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 U	19 U	19 U	18 U	19 U	20 U	20 U	19 UJ	19 U	19 U	20 U	19 U	19 U	19 U	21 U	20 U	20 U	19 U	19 U	18 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7 U	3.7 U	3.9 U	3.6 U	3.7 U	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.7 U	3.9 U	3.7 U	4.2 U	4.1 U	4 U	3.8 U	3.8 U	3.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.9 U	1.9 U	1.8 U	1.9 U	2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2.1 U	2 U	2 U	1.9 U	1.9 U	1.8 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.2 U	9.3 U	9.7 U	8.9 U	9.3 U	9.8 U	9.8 U	9.4 U	9.4 U	9.5 U	10 U	9.3 U	9.7 U	9.3 U	10 U	10 U	10 U	9.4 U	9.5 U	9.1 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	19 U	19 U	18 U	19 U	20 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U	21 U	20 U	20 U	19 U	19 U	18 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U	19 U	19 U	18 U	19 U	20 U	20 U	19 UJ	19 U	19 U	20 U	19 U	19 U	19 U	21 U	20 U	20 U	19 U	19 U	18 U

Notes:
N = Normal Field Sample
FD = Field Duplicate
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
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Checked by:MLB
Date:9/10/2024

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FC16206	E1633DR	T	FC16206-8	LORNG_C1_ST_06042024	Perfluorononanoic acid (PFNA)	0.88	J	0.88	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	56.9	=	56.9	J+	MSH, MSD	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-9	LORNG_C2_ST_06042024	Perfluorobutanoic acid (PFBA)	11.4	J	11.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.1	J	2.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.58	J	0.58	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16206-13	LORNG_C2_ST_06042024FD	Perfluorobutanoic acid (PFBA)	10.5	J	10.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.81	J	0.81	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L

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FC16206	E1633DR	T	FC16206-14	LORNG_C3_ST_06042024	Perfluorodecanoic acid (PFDA)	0.72	J	0.72	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.1	J	1.1	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	17.2	J	17.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16206-15	LORNG_C3_ST_06042024FD	Perfluorodecanoic acid (PFDA)	0.56	J	0.56	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.98	J	0.98	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	13.7	J	13.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16206-21	LORNG_ST07008_06042024	Perfluorobutanoic acid (PFBA)	6.5	J	6.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.8	J	5.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.2	J	3.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.8	J	2.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.49	J	0.49	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.8	U	7.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L

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FC16206	E1633DR	T	FC16206-22	LORNG_ST13008_06042024	Perfluorobutanoic acid (PFBA)	8.5	J	8.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.5	J	5.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.6	J	3.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.1	J	3.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	IAG, TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.7	U	7.7	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-23	LORNG_ST13014_06042024	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.71	J	0.71	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.7	U	7.7	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-24	LORNG_ST13014_06042024FD	Perfluorononanoic acid (PFNA)	1	J	1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	IAG, TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.3	J	1.3	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.8	U	7.8	UJ	CVHL	NG/L

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FC16206	E1633DR	T	FC16206-24	LORNG_ST13014_06042024FD	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC16206-25	LORNG_ST13015_06042024	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.95	J	0.95	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.8	U	7.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC16206-16	LORNG_ST16002_06042024	Perfluorobutanoic acid (PFBA)	4.7	J	4.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.2	J	5.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.65	J	0.65	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.81	J	0.81	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1	J	1	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-26	LORNG_ST16003_06042024	Perfluorobutanoic acid (PFBA)	6.8	J	6.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.1	J	7.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L

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FC16206	E1633DR	T	FC16206-26	LORNG_ST16003_06042024	Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.5	U	7.5	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-10	LORNG_ST16007_06042024	Perfluorobutanoic acid (PFBA)	4.8	J	4.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.9	J	4.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.98	J	0.98	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2	J	2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.71	J	0.71	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-17	LORNG_ST18013_06042024	Perfluorobutanoic acid (PFBA)	4.6	J	4.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.8	J	5.8	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.6	J	3.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.78	J	0.78	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.4	J	4.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	J	1.8	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.9	J	0.9	J	TR	NG/L

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FC16206	E1633DR	T	FC16206-17	LORNG_ST18013_06042024	Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-18	LORNG_ST18013_06042024FD	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.2	J	6.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.79	J	0.79	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.6	J	3.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.5	J	1.5	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	J	1.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16206-11	LORNG_ST18014_06042024	Perfluorobutanoic acid (PFBA)	4.5	J	4.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6	J	4.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.4	J	3.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.1	J	3.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.96	J	0.96	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3	J	3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.7	J	3.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.7	J	1.7	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

Prepared by:AKN
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Checked by:MLB
Date:9/10/2024

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16206	E1633DR	T	FC16206-12	LORNG_ST18016_06042024	Perfluorobutanoic acid (PFBA)	4.3	J	4.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6	J	4.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.5	J	3.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.75	J	0.75	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.67	J	0.67	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.69	J	0.69	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16206-19	LORNG_ST18017_06042024	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.2	J	3.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.4	J	3.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.6	J	2.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.5	J	2.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.92	J	0.92	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.86	J	0.86	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16206-27	LORNG_ST21005_06042024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.64	J	0.64	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.87	J	0.87	J	TR	NG/L

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Checked by:MLB
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16206	E1633DR	T	FC16206-27	LORNG_ST21005_06042024	Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.1	U	7.1	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
FC16234	E1633DR	T	FC16234-13	LORNG_ST07007_06052024	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.2	J	4.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3	J	3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.1	J	3.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.57	J	0.57	J	TR	NG/L
			FC16234-6	LORNG_ST08001_06052024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.6	J	3.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
			FC16234-7	LORNG_ST08001_06052024FD	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.6	J	0.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.3	J	3.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.2	J	2.2	J	TR	NG/L
			FC16234-14	LORNG_ST08003_06052024	Perfluorononanoic acid (PFNA)	3	J	3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.6	J	7.6	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16234	E1633DR	T	FC16234-8	LORNG_ST08006_06052024	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1	J	1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.1	J	2.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.8	J	0.8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.98	J	0.98	J	TR	NG/L
			FC16234-1	LORNG_ST11003_06052024	Perfluorobutanoic acid (PFBA)	9.8	J	9.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.6	J	0.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	J	2.8	J	TR	NG/L
			FC16234-2	LORNG_ST11003_06052024FD	Perfluorobutanoic acid (PFBA)	8.8	J	8.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.9	J	4.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.64	J	0.64	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4	J	2.4	J	TR	NG/L
			FC16234-15	LORNG_ST12001_06052024	Perfluorodecanoic acid (PFDA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	1.6	J	1.6	J	TR	NG/L
					Perfluorododecanoic acid (PFDoA)	1	J	1	J	IAG, TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	5.4	J	5.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	38.1	=	38.1	J	IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	U	19	UJ	CVHL	NG/L

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Checked by:MLB
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16234	E1633DR	T	FC16234-3	LORNG_ST12002_06052024	Perfluorobutanoic acid (PFBA)	4.3	J	4.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.5	J	2.5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.9	J	2.9	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.1	J	1.1	J	TR	NG/L
			FC16234-16	LORNG_ST12006_06052024	Perfluorobutanoic acid (PFBA)	12.7	J	12.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	3.2	J	3.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.86	J	0.86	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.76	J	0.76	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.58	J	0.58	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	12.8	J	12.8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.74	J	0.74	J	TR	NG/L
			FC16234-9	LORNG_ST13006_06052024	Perfluorobutanoic acid (PFBA)	14.7	J	14.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.9	J	2.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.7	J	2.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	13	J	13	J	TR	NG/L
			FC16234-17	LORNG_ST13017_06052024	Perfluorobutanoic acid (PFBA)	11.5	J	11.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.4	J	4.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16234	E1633DR	T	FC16234-10	LORNG_ST13019_06052024	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.4	J	4.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.8	J	3.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.4	J	3.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.1	J	3.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.93	J	0.93	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.6	J	0.6	J	TR	NG/L
			FC16234-11	LORNG_ST13020_06052024	Perfluorobutanoic acid (PFBA)	6.9	J	6.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
			FC16234-18	LORNG_ST13022_06052024	Perfluorobutanoic acid (PFBA)	7.2	J	7.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.6	J	6.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.2	J	2.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.75	J	0.75	J	TR	NG/L
			FC16234-4	LORNG_ST13023_06052024	Perfluorobutanoic acid (PFBA)	4.5	J	4.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.6	J	5.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	4	J	4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.6	J	3.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.56	J	0.56	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16234	E1633DR	T	FC16234-19	LORNG_ST21002_06052024	Perfluorobutanoic acid (PFBA)	12.4	J	12.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.91	J	0.91	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1	J	1	J	TR	NG/L
			FC16234-5	LORNG_ST21004_06052024	Perfluorobutanoic acid (PFBA)	9.7	J	9.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.49	J	0.49	J	TR	NG/L
			FC16234-12	LORNG_ST21016_06052024	Perfluoropentanoic acid (PFPeA)	4.9	J	4.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.6	J	3.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.6	J	2.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.87	J	0.87	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J	TR	NG/L
			FC16234-20	LORNG_ST21018_06052024	Perfluorobutanoic acid (PFBA)	10	J	10	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.61	J	0.61	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.1	J	1.1	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J+ = Analyte is estimated; potential high bias

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

CVHL = High ISC or CCV recovery.

IAG = Transition ion ratio outside limits

IVD = ICV recovery is outside of limits.

MSH = MS/MSD recovery greater than the upper control limit

MSD = RPD between the MS/MSD is greater than control limit.

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:8/23/24
Checked by:MLB
Date:9/10/2024

Table 4 - Field Duplicate Summary
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16206	LORNG_C2_ST_06042024	LORNG_C2_ST_06042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	11.4	J	10.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	11.4		8.8		26	
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.7		7.8		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5		5		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.6		5.5		2	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.1	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.4	J	1.9	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.1	J	1.8	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	27.1		27.5		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.58	J	0.81	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	43		39.3		9	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	UJ	1.8	UJ	NC	CVHL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	

Prepared by: AKN 8/23/24
Checked by:MLB 9/10/2024

Table 4 - Field Duplicate Summary
Data Validation Report
June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16206	LORNG_C3_ST_06042024	LORNG_C3_ST_06042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	16.9		16.8		1	
				Perfluoropentanoic acid (PFPeA) (NG/L)	49.1		52.6		7	
				Perfluorohexanoic acid (PFHxA) (NG/L)	54.6		57.7		6	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	22.9		24.1		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	48.4		53.6		10	
				Perfluorononanoic acid (PFNA) (NG/L)	3.7		4		8	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.72	J	0.56	J	NC	TR
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	8.5		9.8		14	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	10.1		11.1		9	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	194		206		6	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	6.6		6.3		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	346		337		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.1	J	0.98	J	NC	TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	UJ	1.8	UJ	NC	CVHL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	59.6		70.9		17	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	17.2	J	13.7	J	NC	TR
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	10.9		11.2		3	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	8.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	

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June 2024 Storm Water Event
Loring PFAS RI
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Spring 2024 Stormwater Program

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16206	LORNG_ST13014_06042024	LORNG_ST13014_06042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	78.6		74.7		5	
				Perfluoropentanoic acid (PFPeA) (NG/L)	11.8		12.2		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.6		7.9		18	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.4		6.5		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.2		5.3		2	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.97	J	1.3	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.6	J	1.3	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	22		21.6		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.71	J	1.3	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	33.3		33.4		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	UJ	2	UJ	NC	CVHL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.7	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.7	UJ	7.8	UJ	NC	CVHL
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.7	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	9.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	20	U	NC	

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June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16206	LORNG_ST18013_06042024	LORNG_ST18013_06042024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.6	J	5.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.8	J	6.2	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	7.4		7.7		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.7		4.4		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	3.6	J	3.6		0	TR
				Perfluorononanoic acid (PFNA) (NG/L)	0.78	J	0.79	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.5	J	2.5	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.4	J	3.6	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	46.5		46.6		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.5	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	82.6		87.6		6	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.9	J	1.8	U	NC	TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	UJ	1.8	UJ	NC	CVHL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	

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June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16234	LORNG_ST08001_06052024	LORNG_ST08001_06052024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.3	J	5.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	9.6		9.9		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	12.2		12.3		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.1		5		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	11.8		12		2	
				Perfluorononanoic acid (PFNA) (NG/L)	0.7	J	0.6	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.5	J	2.3	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	J	3.3	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	64.5		65.1		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.4	J	1.4	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	32.6		33.3		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	J	2.2	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.7	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

Prepared by: AKN 8/23/24
Checked by:MLB 9/10/2024

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Spring 2024 Stormwater Program

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16234	LORNG_ST11003_06052024	LORNG_ST11003_06052024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	9.8	J	8.8	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.3	J	4.9	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	15.2		13.6		11	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.9		4.5		9	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.8		5.9		14	
				Perfluorononanoic acid (PFNA) (NG/L)	0.6	J	0.64	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	12		10.2		16	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	18.8		15.3		21	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	137		120		13	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.1		4.2		19	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	83.3		69.5		18	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.8	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.8	J	2.4	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.8	U	9.8	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	

Notes:
U = Analyte not detected at the associated detection limits
J = Analyte is estimated
UJ = Analyte not detected; reporting limits estimated
NG/L = nanograms per liter
NC = not calculated.
CVHL = High ISC or CCV recovery.
IVD = ICV recovery is outside of limits.
RPD = relative percent difference between parent sample and field duplicate.
TR = Analyte concentration is less than LOQ

Prepared by: AKN 8/23/24
Checked by:MLB 9/10/2024

Table 5 - Split Sample Comparison Summary
Data Validation Report
June 2024 Storm Water Event
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Stormwater Program

		LOQ (ng/L)				
Sample ID	**Detected Analytes**	**SGS**	**BV Labs**	**Primary (SGS)**	**Split (BV)**	**RPD**
LORNG_ST16002_06042024	Perfluorobutanoic acid	15	5.8	4.7 J	5.7 J	19%
	Perfluoropentanoic acid	7.4	2.9	5.2 J	6.3	19%
	Perfluorohexanoic acid	3.7	1.5	6.3	8.1	25%
	Perfluoroheptanoic acid	3.7	1.5	5.3	6.3	17%
	Perfluorooctanoic acid	3.7	1.5	4.6	5.2	12%
	Perfluorononanoic acid	3.7	1.5	0.65 J	0.77 J	17%
	Perfluorobutanesulfonic acid	3.7	1.3	1.5 J	1.7	13%
	Perfluoropentanesulfonic acid	4.6	1.4	1.8 J	2.1	15%
	Perfluorohexanesulfonic acid	3.7	1.4	27.3	30	9%
	Perfluoroheptanesulfonic acid	3.7	1.4	0.81 J	0.65 J	22%
	Perfluorooctanesulfonic acid	3.7	1.4	37.0	41	10%
	PFOSA	3.7	1.5	1.0 J	1.2 J	18%

Notes:

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

NG/L = nanograms per liter

RPD = relative percent difference

prepared by MB
reviewed by CR
11/5/2024

QA LEVEL I - DATA VERIFICATION CHECKLIST

Project Name: Loring AFB
Project Number: US-EI-775361701
Reviewing Company: WSP USA Environment & Infrastructure Inc
Project Manager:
Data Evaluator: Morgan Schimelfenig
Data Evaluation Date: 9/23/2024
Laboratory: SGS
Lab Job #: FC16222, FC16678, FC16720, FC16786, FC16856, FC17160 FC15489, FC14693, FC17268

Matrix: ☒ Aqueous ☒ Soil ☐ Sediment ☐ Waste ☐ Air ☐ Other:

Analytical Methods: See Table 1.

Sample Information: See Table 1.

Data Qualification: No qualifications required. Table 2 has final results.

Work Plan or QAPP reference: TO 1048 Quality Program Plan Rev 1, April 2024

Data Validation Guidance: DoD QSM 5.4 Quality Control Limits and Laboratory Quality Control Limits

Chain of Custody (COC) and Sample Receipt	YES	NO	NA	COMMENT
a) COC complete and correct? (Project location, contacts, sample IDs, sample dates, field QC samples, analyses identified, et c.)	☒	☐		
b) COC documents release of custody (signed and dated)?	☒	☐		
c) Field QC types provided (note types)?	☐	☐	☒	
d) Did the cooler contents match the COC?	☒	☐		
e) Were samples received in good condition?	☒	☐		
f) Were cooler temperatures within control limits?	☒	☐		

Data Package Information	YES	NO	NA	COMMENT
a) Laboratory name and location documented?	☒	☐		
b) All samples on COC reported in data package?	☒	☐		
c) Requested analytical methods used?	☒	☐		
d) Requested analyte list reported?	☒	☐		
e) Requested units reported?	☒	☐	☐	
f) Did the laboratory define the qualifiers used?	☒	☐		
g) Data package contains all information necessary to complete the data quality review?	☒	☐		

Analytical Assessment	YES	NO	NA	COMMENT
a) Solid samples reported on a dry-weight basis?	☒	☐	☐	
b) Were solid samples percent moisture criteria acceptable?	☒	☐	☐	
c) Were sample dilutions noted?	☒	☐		

Analytical Assessment	YES	NO	NA	COMMENT
d) Were detected concentrations less than the QL qualified by the laboratory?	☒	☐		
e) All detected sample results within the calibrated range?	☒	☐		
f) Did the laboratory satisfy the requested sensitivity requirements?	☒	☐		

Laboratory Case Narrative	YES	NO	NA	COMMENT
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	☒	☐	☐	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

Sample Preservation and Holding Time	YES	NO	NA	COMMENT
a) Were samples properly preserved?	☒	☐		
b) Were holding times met for sample preparation and/or extraction?	☒	☐	☐	
c) Were holding times met for sample analysis?	☒	☐		

Blanks	YES	NO	NA	COMMENTS
a) Are any analytes detected in the associated preparation/method blank(s)?	☐	☒		
b) Are any analytes detected in the associated trip blank(s)?	☐	☐	☒	
c) Are any analytes detected in the associated field or equipment/rinsate blank(s)?	☐	☒	☐	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates reported?	☐	☒	☐	
b) Was field duplicate RPD or absolute difference criteria acceptable?	☐	☐	☒	

Overall Evaluation	YES	NO	NA	COMMENTS
a) Any other technical problems that lead to data rejection identified by laboratory?	☐	☒		
b) Were data acceptable and usable, except where noted?	☒	☐		

Comments/Notes:

1) According to the case narrative for SDG FC16222, the matrix spike and/or matrix spike duplicate recoveries for perfluorobutanesulfonic acid (PFBS), perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorooctanesulfonic acid (PFOS), and perfluoropentanesulfonic acid (PFPeS) were outside of control limits. The associated sample is not part of SDG FC16222 and has no effect on the reported data.

2) According to the case narrative for SDG FC16678, the duplicate RPDs for 2h,2h,3h,3h-perfluorooctanoic acid (5:3-FTCA), 3-perfluoroheptyl propanoic acid (7:3-FTCA), PFBS, perfluorododecanesulfonic acid (PFDoS), and perfluoro-4-methoxybutanoic acid (PFMBA) were high. The associated sample is not part of SDG FC16678 and has no effect on the reported data.

3) According to the case narrative for SDG FC16720 and FC16786, the matrix spike recoveries for PFHxS and PFOS were outside of control limits. The associated sample is not part of SDG FC16720 and FC16786 and has no effect on the reported data.

4) According to the case narrative for SDG FC16720 and FC16786, the RPD in the laboratory duplicate for 8:2 fluorotelomer sulfonic acid (8:2-FTS) was outside of control limits. The associated sample is not part of SDG FC16720 and FC16786 and has no effect on the reported data.

5) According to the case narrative for SDG 16586, the RPD in the MS/MSD for 4:2 fluorotelomer sulfonic acid (4:2-FTS) was outside of control limits. The associated sample is not part of SDG FC16586 and has no effect on the reported data.

6) According to the case narrative for SDG 16586, the percent recovery in the ICV for n-methyl-heptadecafluorooctane sulfonamide (NMeFOSA) was high associated with sample LORNG_SR_IDW_01_06262024.

7) According to the case narrative for SDG FC17160, the recoveries in the LLCS for n-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) and hexafluoropropylene oxide dimer acid (HFPO-DA) were outside of control limits associated with sample LORNG_IDW-EFF06_07122024.

8) According to the case narrative for SDG 17268, the recoveries in the LLCS for n-methyl-heptadecafluorooctane sulfonamidoethanol (NMeFOSE) and perfluorodecanoic acid (PFDA) were outside control limits associated with sample LORNG_IDW-EFF07_07162024.

9) According to the case narrative for SDG 17268, the RPD in the laboratory duplicate for perfluoroheptanoic acid (PFHpA) is outside of control limits. The associated sample is not part of SDG 17268 and has no effect on the reported data.

10) According to the case narrative for SDG 15489, the percent recovery in the ICV for 8:2-FTS and n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) were outside of control limits associated with the samples LORNG_FB03_05072024 and LORNG_FB04_05072024.

11) According to the case narrative for SDG 15489, the percent recovery in the MS for PFHxS is outside of control limits. The associated sample is not part of SDG 15489 and has no effect on the reported data.

12) According to the case narrative for SDG 14693, the recoveries in the MS and/or MSD for 3-perfluoropropyl propanoic acid (3:3FTCA), PFOS, and perfluoro-3-methoxypropanoic acid (PFMPA) were outside control limits. The associated sample is not part of SDG 14693 and has no effect on the reported data.

13) According to the case narrative for SDG 14693, the RPD in the MS/MSD for 4:2-FTS was outside control limits. The associated sample is not part of SDG 14693 and has no effect on the reported data.

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 IDW Sampling Program

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC14693	SOURCE WATER	LORING_FB01_04092024	FC14693-1	4/9/2024	WH	N	40
FC15489	SOURCE WATER	LORNG_FB03_05072024	FC15489-1	5/7/2024	WH	N	40
		LORNG_FB04_05072024	FC15489-5	5/7/2024	WH	N	40
FC16222	IDW-EFF	LORNG_IDW-EFF01_06072024	FC16222-1	6/7/2024	WT	N	40
		LORNG_IDW-EFF02_06072024	FC16222-2	6/7/2024	WT	N	40
	IDW-INF	LORNG_IDW-INF01_06062024	FC16222-3	6/6/2024	WT	N	40
FC16678	IDW-EFF	LORNG_IDW-EFF03_06212024	FC16678-1	6/21/2024	WT	N	40
	IDW-INF	LORNG_IDW-INF02_06212024	FC16678-2	6/21/2024	WT	N	40
FC16720	IDW-EFF	LORNG_IDW-EFF04_06242024	FC16720-1	6/24/2024	WT	N	40
FC16786	IDW-EFF	LORNG_IDW-EFF05_06252024	FC16786-1	6/25/2024	WT	N	40
FC16856	SR_IDW	LORNG_SR_IDW_01_06262024	FC16856-1	6/26/2024	SD	N	40
FC17160	IDW-EFF	LORNG_IDW-EFF06_07122024	FC17160-1	7/12/2024	WT	N	40
FC17268	IDW-EFF	LORNG_IDW-EFF07_07162024	FC17268-1	7/16/2024	WT	N	40

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

SD = Soil IDW Sample; WH = Source Water; WT = Treatment System Sample

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/27/25
Checked by:TC
Date:3/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC14693		FC15489		FC16222			FC16678		FC16720	FC16786	FC17160	FC17268
			Location	SOURCEWATER		SOURCEWATER		IDW-EFF		IDW-INF	IDW-EFF	IDW-INF	IDW-EFF	IDW-EFF	IDW-EFF	IDW-EFF
			Sample Date	4/9/2024		5/7/2024		6/7/2024		6/6/2024	6/21/2024	6/21/2024	6/24/2024	6/25/2024	7/12/2024	7/16/2024
			Sample ID	LORING_FB01_04092024		LORNG_FB03_05072024	LORNG_FB04_05072024	LORNG_IDW-EFF01_06072024	LORNG_IDW-EFF02_06072024	LORNG_IDW-INF01_06062024	LORNG_IDW-EFF03_06212024	LORNG_IDW-INF02_06212024	LORNG_IDW-EFF04_06242024	LORNG_IDW-EFF05_06252024	LORNG_IDW-EFF06_07122024	LORNG_IDW-EFF07_07162024
			QC Code	N		N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.6	U	3.7	U	8.8	J	7.6	J	5.1	J	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.8	U	1.9	U	2.1	J	2.4	J	6.9	J	1.9	U	4	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.8	U	1.9	U	0.73	J	0.91	J	7.5		1.9	U	3.4	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2.2	J	1.9	U	1.1	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	0.91	U	0.93	U	0.95	U	0.96	U	3	J	0.97	U	0.84	J	0.94	U	0.93	U	0.99	U	0.97	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.8	U	1.9	U	1	J	1	J	3.2	J	1.9	U	0.64	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	3	J	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.8	U	1.9	U	2.4	J	4.3		14.7		1.9	U	2.9	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.8	U	1.9	U	1.6	J	1.8	J	4.4		1.9	U	1.6	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.3	U	7.4	U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.3	U	7.4	U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.3	U	7.4	U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	19	U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	19	U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.6	U	3.7	U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.1	U	9.3	U	9.5	U	9.6	U	10	U	9.7	U	9.7	U	9.4	U	9.3	U	9.9	U	9.7	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	19	U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	19	U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U

Prepared by: AKN
Date: 2/27/25
Checked by:TC
Date:3/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC16856	
			Location	SR_IDW	
			Sample Date	6/26/2024	
			Sample ID	LORNG_SR_IDW_01_06262024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00097	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00048	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00048	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00048	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00048	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00048	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00048	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00048	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00048	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00048	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00048	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00048	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00048	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00048	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00048	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00028	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00048	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00048	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00048	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0012	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0012	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0012	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00048	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00048	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0024	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0024	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00097	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00097	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00048	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00048	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.00097	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0012	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0012	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00048	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0012	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.006	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.006	U

Prepared by: AKN
Date: 2/27/25
Checked by:TC
Date:3/4/25

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 IDW Sampling Program

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC14693	SOURCE WATER	LORING_FB01_04092024	FC14693-1	4/9/2024	WH	N	40
FC15489	SOURCE WATER	LORNG_FB03_05072024	FC15489-1	5/7/2024	WH	N	40
		LORNG_FB04_05072024	FC15489-5	5/7/2024	WH	N	40
FC16222	IDW-EFF	LORNG_IDW-EFF01_06072024	FC16222-1	6/7/2024	WT	N	40
		LORNG_IDW-EFF02_06072024	FC16222-2	6/7/2024	WT	N	40
	IDW-INF	LORNG_IDW-INF01_06062024	FC16222-3	6/6/2024	WT	N	40
FC16678	IDW-EFF	LORNG_IDW-EFF03_06212024	FC16678-1	6/21/2024	WT	N	40
	IDW-INF	LORNG_IDW-INF02_06212024	FC16678-2	6/21/2024	WT	N	40
FC16720	IDW-EFF	LORNG_IDW-EFF04_06242024	FC16720-1	6/24/2024	WT	N	40
FC16786	IDW-EFF	LORNG_IDW-EFF05_06252024	FC16786-1	6/25/2024	WT	N	40
FC16856	SR_IDW	LORNG_SR_IDW_01_06262024	FC16856-1	6/26/2024	SD	N	40
FC17160	IDW-EFF	LORNG_IDW-EFF06_07122024	FC17160-1	7/12/2024	WT	N	40
FC17268	IDW-EFF	LORNG_IDW-EFF07_07162024	FC17268-1	7/16/2024	WT	N	40

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

SD = Soil IDW Sample; WH = Source Water; WT = Treatment System Sample

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/27/25
Checked by:TC
Date:3/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC16856	
			Location	SR_IDW	
			Sample Date	6/26/2024	
			Sample ID	LORNG_SR_IDW_01_06262024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00097	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00048	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00048	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00048	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00048	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00048	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00048	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00048	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00048	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00048	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00048	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00048	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00048	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00048	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00048	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00028	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00048	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00048	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00048	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0012	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0012	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0012	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00048	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00048	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00048	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0024	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0024	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00097	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00097	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00048	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00048	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.00097	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0012	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0012	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00048	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0012	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.006	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.006	U

Prepared by: AKN
Date: 2/27/25
Checked by:TC
Date:3/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 IDW Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC14693		FC15489			FC16222				FC16678			FC16720		FC16786		FC17160		FC17268	
			Location	SOURCEWATER		SOURCEWATER			IDW-EFF			IDW-INF	IDW-EFF		IDW-INF	IDW-EFF		IDW-EFF		IDW-EFF		IDW-EFF	
			Sample Date	4/9/2024		5/7/2024			6/7/2024			6/6/2024	6/21/2024		6/21/2024	6/24/2024		6/25/2024		7/12/2024		7/16/2024	
			Sample ID	LORING_FB01_0409 2024		LORNG_FB03_0507 2024		LORNG_FB04_0507 2024	LORNG_IDW-EFF01_06072024		LORNG_IDW-EFF02_06072024		LORNG_IDW-INF01_06062024		LORNG_IDW-EFF03_06212024		LORNG_IDW-INF02_06212024		LORNG_IDW-EFF04_06242024		LORNG_IDW-EFF05_06252024		LORNG_IDW-EFF06_07122024		LORNG_IDW-EFF07_07162024	
			QC Code	N		N		N	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.6	U	3.7 U	8.8	J	7.6	J	5.1	J	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.8	U	1.9 U	2.1	J	2.4	J	6.9	J	1.9	U	4	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.8	U	1.9 U	0.73	J	0.91	J	7.5		1.9	U	3.4	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2.2	J	1.9	U	1.1	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	0.91	U	0.93 U	0.95	U	0.96	U	3	J	0.97	U	0.84	J	0.94	U	0.93	U	0.99	U	0.97	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.8	U	1.9 U	1	J	1	J	3.2	J	1.9	U	0.64	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	3	J	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.8	U	1.9 U	2.4	J	4.3		14.7		1.9	U	2.9	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.8	U	1.9 U	1.6	J	1.8	J	4.4		1.9	U	1.6	J	1.9	U	1.9	U	2	U	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
PFAS	T	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.3	U	7.4 U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.3	U	7.4 U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.3	U	7.4 U	7.6	U	7.7	U	8	U	7.8	U	7.8	U	7.5	U	7.4	U	7.9	U	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	19 U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	19 U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.6	U	3.7 U	3.8	U	3.8	U	4	U	3.9	U	3.9	U	3.8	U	3.7	U	4	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.9 U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.1	U	9.3 U	9.5	U	9.6	U	10	U	9.7	U	9.7	U	9.4	U	9.3	U	9.9	U	9.7	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	19 U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	19 U	19	U	19	U	20	U	19	U	19	U	19	U	19	U	20	U	19	U

Prepared by: AKN
Date: 2/27/25
Checked by:TC
Date:3/4/25

Data Validation Report
Loring PFAS Remedial Investigation
August – October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil, sediment, porewater, and surface water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August, September, and October 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America (SGS) located in Orlando, Florida, or Bureau Veritas Environmental Laboratory (BV) located in Mississauga, Ontario, Canada, for analysis.

SGS analyzed 163 samples and 22 equipment blanks, and BV analyzed 10 samples and 1 equipment blank, for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Summary of Field Duplicate Results
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2B data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stage 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

EBG = Equipment blank contamination greater than reporting limit
EBL = Equipment blank contamination less than reporting limit
EISH = Extracted internal standard response greater than upper control limit
EISL = Extracted internal standard response less than upper control limit
FDD = Field duplicate relative percent difference (RPD) criteria exceeded
IAG = Ion abundance ratio outside calculated limits
LBL = Laboratory blank contamination less than reporting limit
MSL = Matrix spike recovery less than lower control limit
PJ = Professional judgment
SNL = Signal-to-noise ratio less than 10:1 for ions used for quantitation

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
  Field Duplicates
  Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
  Miscellaneous

* QC criteria were met for this parameter.

2.1.1 QC Blanks

C4V9681

Perfluorohexanesulfonic acid (PFHxS) was detected in the laboratory blank for batch 9714145 (0.000043 J mg/kg) associated with a subset of samples. The detection of PFHxS in sample E-A-SD01W_00-0.5-20241003FD was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported concentration with reason code LBL.

FC19899

Perfluorooctanesulfonic acid (PFOS) was detected in laboratory instrument blank IBLK 9Q2729.d associated with a subset of samples. The detection of PFOS in sample E-A-PW01I_20241022 was reported at a concentration less than the LOD and the result was qualified as not-detected (U) at the LOD with reason code LBL.

FC18138

Perfluorohexanoic acid (PFHxA) and perfluorononanoic acid (PFNA) were detected in equipment blank LORNG_EB201_08142024 (2.0 J ng/l and 0.66 ng/l, respectively) associated with a subset of samples. The detection of PFHxA in sample E-A-PW01Q_20240814 was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported concentration with reason code EBL. The detection of PFNA in sample E-A-PW01Q_20240814 was reported at a concentration less than the LOD and the result was qualified as not-detected (U) at the LOD with reason code EBL.

PFHxA and PFNA were detected in equipment blank LORNG_EB201_08142024 (2.0 J ng/l and 0.66 ng/l, respectively) associated with a subset of samples. The detection of PFHxA in sample E-A-PW01R_20240814 was reported at a concentration greater than the LOQ but less than five times the blank concentration and the result was qualified as estimated with potential high bias (J+) at the reported concentration with reason code EBL. The detection of PFNA in sample E-A-PW01R_20240814 was reported at a concentration less than the LOD and the result was qualified as not-detected (U) at the LOD with reason code EBL.

Perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), and PFOS were detected in equipment blank LORNG_EB201_08142024 (3.9 ng/l, 19.4 ng/l, and 9.8 ng/l, respectively) associated with a subset of samples. The detection of PFHpA in sample E-A-PW01Q_20240814 was reported at a concentration less than the LOD and the result was qualified as not-detected (U) at the LOD with reason code EBG. The detection of PFOA in sample E-A-PW01Q_20240814 was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported concentration with reason code EBG. The detection of PFOS in sample E-A-PW01Q_20240814 was reported at a concentration greater than the LOQ but less than five times the blank concentration and the result was qualified as estimated with potential high bias (J+) at the reported concentration with reason code EBG.

PFHpA, PFOA, and PFOS were detected in equipment blank LORNG_EB201_08142024 (3.9 ng/l, 19.4 ng/l, and 9.8 ng/l, respectively) associated with a subset of samples. The detection of PFHpA in sample E-A-PW01R_20240814 was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported concentration with reason code EBG. The detections of PFOA and PFOS in sample E-A-PW01R_20240814 were reported at concentrations greater than the LOQ but less than five times the blank concentration and the results were qualified as estimated with potential high bias (J+) at the reported concentrations with reason code EBG.

FC18225

PFOS was detected in equipment blank LORNG_EB204_08162024 (0.76 ng/l) associated with a subset of samples. The detection of PFOS in sample E-A-PW01C_20240816 was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported concentration with reason code EBL.

2.1.2 MS/MSD

The following samples were used as the solid media MS/MSDs:

E-A-SD01U_00-0.5-20241003
E-A-SD01W_00-0.5-20241003
E-A-SO01N_00-02_20240814
E-A-SD01PB_00-0.3_20240819
E-A-SD01K_00-01_20240912
E-T-SO01P_00-02_20240920

All results were within Method 1633 recovery and relative percent difference (RPD) limits with the following exception:

FC18127

Results for PFOS in sample E-A-SO01N_00-02_20240814 and associated field duplicate E-A-SO01N_00-02_20240814FD were qualified as estimated with potential low bias (J-) with reason code MSL based on low recoveries in the associated MS. The MS percent recovery for PFOS was 30.

The following samples were used as the aqueous media MS/MSDs:

E-A-PW01U_20241003
E-A-SW01W_20241003
E-A-PW01W_20241003
E-A-PW01R_20240814 (MS only)
E-A-PW01PB_20240819 (MS only)
E-A-SW01K_20240912
E-A-PW01X_20240913
E-A-SW02V_20241002
E-A-PW02Z_20241023 (MS only)
E-A-PW01H_20241024 (MS only)

All results were within Method 1633 recovery and RPD limits with the following exceptions:

FC18906

Results for the following compounds in sample E-A-SW01K_20240912 and associated field duplicate E-A-SW01K_20240912FD were qualified as estimated with potential low bias (J-) with reason code MSL based on low recoveries in the associated MS and/or MSD:

PFHpA [58]
PFOA [64]
Perfluorononanesulfonic acid (PFNS) [44/38]
Perfluorodecanesulfonic acid (PFDS) [24/15]

Perfluorooctane sulfonamide (PFOSA) [57]

Percent MS/MSD recoveries for these compounds ranged from 15 to 64 as indicated in brackets above. Control limits from Method 1633 were reported by the laboratory and used for evaluation and qualification of associated sample results.

2.1.3 Field Duplicates

Field duplicate results are summarized on Table 4. Field duplicates were collected and analyzed for the following soil and sediment samples:

E-A-SD01W_00-0.5-20241003
E-A-SO01N_00-02_20240814
E-A-SD01K_00-01_20240912
E-A-SD01M_00-01_20240910
E-A-SD01T_00-01_20240910
E-A-SD01X_00-01_20240912
E-T-SO01P_00-02_20240920
E-T-SO02P_00-02_20240920
E-T-SO01Q_00-02_20241002
E-T-SO02Q_00-02_20241002

All field duplicate RPDs for the solid media locations were within control limits specified in the QPP.

Field duplicates were collected and analyzed for the following aqueous media samples:

E-A-PW01U_20241003
E-A-SW01W_20241003
E-A-PW01W_20241003
E-A-SW01K_20240912
E-A-PW01J_20240912
E-A-SW01M_20240910
E-A-SW01T_20240910
E-A-SW01X_20240912
E-A-PW01X_20240913
E-A-SW02V_20241002
E-A-PW02L_20241021

All field duplicate RPDs for the aqueous media locations were within control limits specified in the QPP with the following exceptions:

FC18906

Results for PFNS and PFDS in sample E-A-SW01K_20240912 and associated field duplicate E-A-SW01K_20240912FD were qualified estimated (J) with reason code FDD based on RPDs greater than the control limit specified in the QPP.

2.1.4 Extracted Internal Standards

FC19899

The reporting limit for 1H,1H, 2H, 2H-perfluorohexane sulfonic acid (4:2FTS) in sample E-A-SW02U_20241023 was qualified estimated (UJ) with reason code EISH based on percent recovery of the associated extracted internal standard (EIS) that was greater than the QSM 5.4 Module 6 and Method 1633 control limit of 200 (215).

The reporting limit for 4:2FTS in sample E-A-SW03I_20241022 was qualified estimated (UJ) with reason code EISH based on percent recovery of the associated EIS that was greater than the QSM 5.4 Module 6 and Method 1633 control limit of 200 (208).

Reporting limits for the following compounds in sample E-A-SW03I_20241022 were qualified estimated (UJ) with reason code EISL based on percent recoveries of the associated EIS that were less than the Method 1633 control limits:

Perfluoroheptanesulfonic acid (PFHpS)
PFOS
PFNS
PFDS
Perfluorododecanesulfonic acid (PFDoS)
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)

Non-detect results for the following compounds in sample E-A-SW03I_20241022 were qualified rejected (R) with reason code EISL based on percent recoveries of the associated EIS that were less than 10:

Perfluorotetradecanoic acid (PFTeDA)
N-ethyl perfluorooctanesulfonamide (NEtFOSA)
N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)
N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)

2.1.5 Compound Identification and Quantitation

The transition ion ratios were outside of the acceptance criteria for one or more compounds for the following samples and the results were qualified as estimated (J) with reason code IAG:

E-A-SW01B_20240815	E-T-SO02K_00-02_20240911
E-A-SW01P_20240813	E-T-SO02M_00-02_20240912

E-A-SD01O_00-0.5_20240813	E-A-SW01M_20240910
E-A-SO01K_00-02_20240814	E-A-SW01M_20240910FD
E-A-PW01R_20240814	E-A-SW01T_20240910
E-A-PW01B_20240815	E-T-SO02N_00-02_20240919
E-A-PW02A_20240820	E-A-PW01V_20240919
E-A-SW01CS_20240819	E-A-SW01Z_20240919
E-A-SW01Y_20240820	E-A-SW02Z_20240919
E-A-SW02A_20240820	E-A-SW01V_20241002
E-A-SD01J_00-01_20240911	E-T-SO02Q_00-02_20241002
E-A-SD01K_00-01_20240912	E-T-SO02Q_00-02_20241002FD
E-A-SD01L_00-01_20240911	E-T-SO03P_00-02_20241002
E-A-SD01M_00-01_20240910FD	E-A-SD02L_00-0.2_20241021
E-A-SD01T_00-01_20240910FD	E-A-SD03I_00-0.2_20241022
E-T-SO01B_00-02_20240912	E-A-SW02I_20241022
E-T-SO01H_00-02_20240912	E-A-PW03L_20241031
E-T-SO01I_00-02-20240912	E-A-SD03L_00-01_20241031
E-T-SO01J_00-02_20240912	E-A-SW03L_20241031
E-T-SO02H_00-02_20240912	

FC18126

The low concentration detection of perfluorodecanoic acid (PFDA) in sample E-A-SW01P_20240813 was qualified not detected (U) at the LOD with reason codes IAG and SNL using professional judgment based on a transition ion ratio outside the acceptance criteria and a signal-to-noise ratio (4.67) that was less than ten.

The low concentration detection of perfluoropentanoic acid (PFPeA) in sample E-A-SW01B_20240815 was qualified not detected (U) at the LOD with reason code SNL based on a signal-to-noise ratio (6.75) that was less than ten. The low concentration detection of PFHpA in sample E-A-SW01B_20240815 was qualified estimated (J) with reason code SNL using professional judgment based on a signal-to-noise ratio (2.92) that was slightly less than three.

The low concentration detection of PFPeA in sample E-A-SW01C_20240816 was qualified not detected (U) at the LOD with reason code SNL based on a signal-to-noise ratio (7.66) that was less than ten.

The low concentration detection of PFPeA in sample E-A-SW01F_20240816 was qualified not detected (U) at the LOD with reason code SNL based on a signal-to-noise ratio (8.45) that was less than ten.

The low concentration detection of PFHpS in sample E-A-SW01Q_20240814 was qualified not detected (U) at the LOD with reason code SNL based on a signal-to-noise ratio (2.08) that was less than three.

2.1.6 Miscellaneous

All reported results for samples E-A-PW01B_20240815-SD, E-A-PW01O_20240813-SD, and E-A-PW01P_20240813-SD were qualified rejected (R) due to the presence of sediment in the pore

water samples at the time of sample extraction. The samples were centrifuged and re-extracted without sediment, and the results of the second set of extractions have been reported in the final data set. Final results are reported with the following sample identifications: E-A-PW01B_20240815, E-A-PW01O_20240813, and E-A-PW01P_20240813.

Reference:

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UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

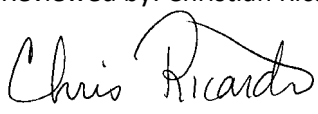
USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Julie Ricardi



January 22, 2025

Reviewed by: Christian Ricardi, NRCC-EAC



January 27, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
C4V9681	01U	E-A-PW01U_20241003	AFNK99	10/3/2024	WI	N	40
		E-A-PW01U_20241003FD	AFNL00	10/3/2024	WI	FD	40
		E-A-SD01U_00-0.5-20241003	AFNL03	10/3/2024	SE	N	40
		E-A-SW01U_20241003	AFNL06	10/3/2024	WS	N	40
	01W	E-A-PW01W_20241003	AFNL01	10/3/2024	WI	N	40
		E-A-PW01W_20241003FD	AFNL02	10/3/2024	WI	FD	40
		E-A-SD01W_00-0.5-20241003	AFNL04	10/3/2024	SE	N	40
		E-A-SD01W_00-0.5-20241003FD	AFNL05	10/3/2024	SE	FD	40
		E-A-SW01W_20241003	AFNL07	10/3/2024	WS	N	40
		E-A-SW01W_20241003FD	AFNL08	10/3/2024	WS	FD	40
	FIELDQC	LORNG_EB216_10032024	AFNL09	10/3/2024	WQ	EB	40
FC18126	01B	E-A-SW01B_20240815	FC18126-1	8/15/2024	WS	N	40
	01C	E-A-SW01C_20240816	FC18126-2	8/16/2024	WS	N	40
	01F	E-A-SW01F_20240816	FC18126-3	8/16/2024	WS	N	40
	01G	E-A-SW01G_20240816	FC18126-4	8/16/2024	WS	N	40
	01O	E-A-SW01O_20240813	FC18126-5	8/13/2024	WS	N	40
	01P	E-A-SW01P_20240813	FC18126-6	8/13/2024	WS	N	40
	01Q	E-A-SW01Q_20240814	FC18126-7	8/14/2024	WS	N	40
FC18127	01B	E-A-SD01B_00-0.5_20240815	FC18127-1	8/15/2024	SE	N	40
	01C	E-A-SD01C_00-0.5_20240816	FC18127-2	8/16/2024	SE	N	40
	01F	E-A-SD01F_00-0.25_20240816	FC18127-12	8/16/2024	SE	N	40
	01G	E-A-SD01G_00-0.2_20240816	FC18127-13	8/16/2024	SE	N	40
	01K	E-A-SO01K_00-02_20240814	FC18127-7	8/14/2024	SO	N	40
	01N	E-A-SO01N_00-02_20240814	FC18127-8	8/14/2024	SO	N	40
		E-A-SO01N_00-02_20240814FD	FC18127-9	8/14/2024	SO	FD	40
	01O	E-A-SD01O_00-0.5_20240813	FC18127-3	8/13/2024	SE	N	40
		E-A-SO01O_00-02_20240813	FC18127-10	8/13/2024	SO	N	40
	01P	E-A-SD01P_00-01_20240813	FC18127-4	8/13/2024	SE	N	40
	01Q	E-A-SD01Q_00-0.5_20240814	FC18127-5	8/14/2024	SE	N	40
	01R	E-A-SD01R_00-0.5_20240814	FC18127-6	8/14/2024	SE	N	40
	02O	E-A-SD02O_00-0.5_20240817	FC18127-14	8/17/2024	SE	N	40
		E-A-SO02O_00-02_20240813	FC18127-11	8/13/2024	SO	N	40
FC18138	01B	E-A-PW01B_20240815-SD	FC18138-1	8/15/2024	WI	N	40
	01O	E-A-PW01O_20240813-SD	FC18138-2	8/13/2024	WI	N	40
	01P	E-A-PW01P_20240813-SD	FC18138-3	8/13/2024	WI	N	40
	01Q	E-A-PW01Q_20240814	FC18138-4	8/14/2024	WI	N	40
	01R	E-A-PW01R_20240814	FC18138-5	8/14/2024	WI	N	40
		E-A-SW01R_20240814	FC18138-6	8/14/2024	WS	N	40
	02O	E-A-SW02O_20240817	FC18138-7	8/17/2024	WS	N	40
FC18138R	01B	E-A-PW01B_20240815	FC18138-1	8/15/2024	WI	N	40
	01O	E-A-PW01O_20240813	FC18138-2	8/13/2024	WI	N	40
	01P	E-A-PW01P_20240813	FC18138-3	8/13/2024	WI	N	40
FC18194	FIELDQC	LORNG_EB200_08132024	FC18194-1	8/13/2024	WQ	EB	40
		LORNG_EB201_08142024	FC18194-2	8/14/2024	WQ	EB	40
		LORNG_EB202_08142024	FC18194-3	8/14/2024	WQ	EB	40
		LORNG_EB203_08152024	FC18194-4	8/15/2024	WQ	EB	40
		LORNG_EB204_08162024	FC18194-5	8/16/2024	WQ	EB	40
		LORNG_EB205_08172024	FC18194-6	8/17/2024	WQ	EB	40
FC18194	FIELDQC	LORNG_EB206_08192024	FC18194-7	8/19/2024	WQ	EB	40

Prepared by:AKN
Date:1/5/25
Checked by: JAR
Date: 1/10/25

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
FC18194	FIELDQC	LORNG_EB207_08202024	FC18194-8	8/20/2024	WQ	EB	40
FC18196	01A	E-A-SD01A_00-0.5_20240820	FC18196-1	8/20/2024	SE	N	40
	01CS	E-A-SD01CS_00-0.3_20240819	FC18196-2	8/19/2024	SE	N	40
	01PB	E-A-SD01PB_00-0.3_20240819	FC18196-3	8/19/2024	SE	N	40
	01Y	E-A-SD01Y_00-01_20240820	FC18196-4	8/20/2024	SE	N	40
	02A	E-A-SD02A_00-0.5_20240820	FC18196-5	8/20/2024	SE	N	40
FC18223	01CS	E-A-PW01CS_20240819	FC18223-1	8/19/2024	WI	N	40
	01F	E-A-PW01F_20240816	FC18223-2	8/16/2024	WI	N	40
	01G	E-A-PW01G_20240817	FC18223-3	8/17/2024	WI	N	40
	01PB	E-A-PW01PB_20240819	FC18223-4	8/19/2024	WI	N	40
	01Y	E-A-PW01Y_20240820	FC18223-5	8/20/2024	WI	N	40
	02A	E-A-PW02A_20240820	FC18223-6	8/20/2024	WI	N	40
	02O	E-A-PW02O_20240818	FC18223-7	8/18/2024	WI	N	40
FC18225	01A	E-A-PW01A_20240820	FC18225-1	8/20/2024	WI	N	40
		E-A-SW01A_20240820	FC18225-3	8/20/2024	WS	N	40
	01C	E-A-PW01C_20240816	FC18225-2	8/16/2024	WI	N	40
	01CS	E-A-SW01CS_20240819	FC18225-4	8/19/2024	WS	N	40
	01PB	E-A-SW01PB_20240819	FC18225-5	8/19/2024	WS	N	40
	01Y	E-A-SW01Y_20240820	FC18225-6	8/20/2024	WS	N	40
	02A	E-A-SW02A_20240820	FC18225-7	8/20/2024	WS	N	40
FC18905	01A	E-T-SO01A_00-02_20240912	FC18905-15	9/12/2024	SO	N	40
	01B	E-T-SO01B_00-02_20240912	FC18905-16	9/12/2024	SO	N	40
	01E	E-T-SO01E_00-02_20240912	FC18905-17	9/12/2024	SO	N	40
	01F	E-T-SO01F_00-02_20240912	FC18905-25	9/12/2024	SO	N	40
	01H	E-T-SO01H_00-02_20240912	FC18905-18	9/12/2024	SO	N	40
	01I	E-T-SO01I_00-02-20240912	FC18905-8	9/12/2024	SO	N	40
	01J	E-A-SD01J_00-01_20240911	FC18905-1	9/11/2024	SE	N	40
		E-T-SO01J_00-02_20240912	FC18905-9	9/12/2024	SO	N	40
	01K	E-A-SD01K_00-01_20240912	FC18905-13	9/12/2024	SE	N	40
		E-A-SD01K_00-01_20240912FD	FC18905-14	9/12/2024	SE	FD	40
	01L	E-A-SD01L_00-01_20240911	FC18905-2	9/11/2024	SE	N	40
		E-T-SO01L_00-02_20240912	FC18905-10	9/12/2024	SO	N	40
	01M	E-A-SD01M_00-01_20240910	FC18905-3	9/10/2024	SE	N	40
		E-A-SD01M_00-01_20240910FD	FC18905-4	9/10/2024	SE	FD	40
		E-T-SO01M_00-02_20240912	FC18905-19	9/12/2024	SO	N	40
	01T	E-A-SD01T_00-01_20240910	FC18905-5	9/10/2024	SE	N	40
		E-A-SD01T_00-01_20240910FD	FC18905-6	9/10/2024	SE	FD	40
	01X	E-A-SD01X_00-01_20240912	FC18905-23	9/12/2024	SE	N	40
		E-A-SD01X_00-01_20240912FD	FC18905-24	9/12/2024	SE	FD	40
	02A	E-T-SO02A_00-02_20240912	FC18905-20	9/12/2024	SO	N	40
	02H	E-T-SO02H_00-02_20240912	FC18905-21	9/12/2024	SO	N	40
	02K	E-T-SO02K_00-02_20240911	FC18905-11	9/11/2024	SO	N	40
	02M	E-A-SD02M_00-01_20240911	FC18905-7	9/11/2024	SE	N	40
		E-T-SO02M_00-02_20240912	FC18905-22	9/12/2024	SO	N	40
	03K	E-T-SO03K_00-02_20240911	FC18905-12	9/11/2024	SO	N	40

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC18906	01J	E-A-PW01J_20240912	FC18906-13	9/12/2024	WI	N	40
		E-A-PW01J_20240912FD	FC18906-14	9/12/2024	WI	FD	40
		E-A-SW01J_20240911	FC18906-1	9/11/2024	WS	N	40
	01K	E-A-SW01K_20240912	FC18906-2	9/12/2024	WS	N	40
		E-A-SW01K_20240912FD	FC18906-3	9/12/2024	WS	FD	40
	01M	E-A-SW01M_20240910	FC18906-4	9/10/2024	WS	N	40
		E-A-SW01M_20240910FD	FC18906-5	9/10/2024	WS	FD	40
	01T	E-A-PW01T_20240910	FC18906-15	9/10/2024	WI	N	40
		E-A-SW01T_20240910	FC18906-6	9/10/2024	WS	N	40
		E-A-SW01T_20240910FD	FC18906-7	9/10/2024	WS	FD	40
	01X	E-A-PW01X_20240913	FC18906-16	9/13/2024	WI	N	40
		E-A-PW01X_20240913FD	FC18906-17	9/13/2024	WI	FD	40
		E-A-SW01X_20240912	FC18906-8	9/12/2024	WS	N	40
		E-A-SW01X_20240912FD	FC18906-9	9/12/2024	WS	FD	40
	FIELDQC	LORNG_EB208_09102024	FC18906-10	9/10/2024	WQ	EB	40
		LORNG_EB209_09112024	FC18906-11	9/11/2024	WQ	EB	40
		LORNG_EB210_09122024	FC18906-12	9/12/2024	WQ	EB	40
		LORNG_EB211_09132024	FC18906-18	9/13/2024	WQ	EB	40
FC19237	01P	E-T-SO01P_00-02_20240920	FC19237-7	9/20/2024	SO	N	40
		E-T-SO01P_00-02_20240920FD	FC19237-8	9/20/2024	SO	FD	40
	01V	E-A-SD01V_00-01_20240919	FC19237-1	9/19/2024	SE	N	40
	01Z	E-A-SD01Z_00-0.5_20240919	FC19237-2	9/19/2024	SE	N	40
	02N	E-T-SO02N_00-02_20240919	FC19237-9	9/19/2024	SO	N	40
	02P	E-T-SO02P_00-02_20240920	FC19237-10	9/20/2024	SO	N	40
		E-T-SO02P_00-02_20240920FD	FC19237-11	9/20/2024	SO	FD	40
	02V	E-A-SD02V_00-01_20240919	FC19237-3	9/19/2024	SE	N	40
	02Z	E-A-SD02Z_00-0.5_20240919	FC19237-4	9/19/2024	SE	N	40
	03V	E-A-SD03V_00-01_20240919	FC19237-5	9/19/2024	SE	N	40
	03Z	E-A-SD03Z_00-0.5_20240919	FC19237-6	9/19/2024	SE	N	40
FC19238	01V	E-A-PW01V_20240919	FC19238-1	9/19/2024	WI	N	40
	01Z	E-A-SW01Z_20240919	FC19238-4	9/19/2024	WS	N	40
	02V	E-A-PW02V_20240919	FC19238-2	9/19/2024	WI	N	40
	02Z	E-A-SW02Z_20240919	FC19238-5	9/19/2024	WS	N	40
	03V	E-A-PW03V_20240919	FC19238-3	9/19/2024	WI	N	40
	03Z	E-A-SW03Z_20240919	FC19238-6	9/19/2024	WS	N	40
	FIELDQC	LORNG_EB212_09202024	FC19238-7	9/20/2024	WQ	EB	40
		LORNG_EB213_09192024	FC19238-8	9/19/2024	WQ	EB	40
		LORNG_EB214_09202024	FC19238-9	9/20/2024	WQ	EB	40
FC19346	01Q	E-T-SO01Q_00-02_20241002	FC19346-5	10/2/2024	SO	N	40
		E-T-SO01Q_00-02_20241002FD	FC19346-6	10/2/2024	SO	FD	40
	01V	E-A-SW01V_20241002	FC19346-1	10/2/2024	WS	N	40
	02Q	E-T-SO02Q_00-02_20241002	FC19346-7	10/2/2024	SO	N	40
		E-T-SO02Q_00-02_20241002FD	FC19346-8	10/2/2024	SO	FD	40
	02V	E-A-SW02V_20241002	FC19346-2	10/2/2024	WS	N	40
		E-A-SW02V_20241002FD	FC19346-3	10/2/2024	WS	FD	40
	03P	E-T-SO03P_00-02_20241002	FC19346-9	10/2/2024	SO	N	40
	03V	E-A-SW03V_20241002	FC19346-4	10/2/2024	WS	N	40
	FIELDQC	LORNG_EB215_10022024	FC19346-10	10/2/2024	WQ	EB	40
	01I	E-A-SD01I_00-0.2_20241022	FC19896-1	10/22/2024	SE	N	40

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC19896	01S	E-A-SD01S_00-0.2_20241023	FC19896-5	10/23/2024	SE	N	40
	02I	E-A-SD02I_00-0.2_20241022	FC19896-2	10/22/2024	SE	N	40
	02J	E-A-SD02J_00-0.2_20241022	FC19896-6	10/22/2024	SE	N	40
	02L	E-A-SD02L_00-0.2_20241021	FC19896-3	10/21/2024	SE	N	40
	02U	E-A-SD02U_00-0.2_20241023	FC19896-8	10/23/2024	SE	N	40
	03I	E-A-SD03I_00-0.2_20241022	FC19896-4	10/22/2024	SE	N	40
	04Z	E-A-SD04Z_00-0.2_20241023	FC19896-7	10/23/2024	SE	N	40
FC19899	01I	E-A-PW01I_20241022	FC19899-1	10/22/2024	WI	N	40
	01S	E-A-PW01S_20241023	FC19899-5	10/23/2024	WI	N	40
		E-A-SW01S_20241023	FC19899-18	10/23/2024	WS	N	40
	01Z	E-A-PW01Z_20241023	FC19899-6	10/23/2024	WI	N	40
	02I	E-A-PW02I_20241022	FC19899-2	10/22/2024	WI	N	40
		E-A-SW02I_20241022	FC19899-14	10/22/2024	WS	N	40
	02J	E-A-PW02J_20241022	FC19899-7	10/22/2024	WI	N	40
	02L	E-A-PW02L_20241021	FC19899-3	10/21/2024	WI	N	40
		E-A-PW02L_20241021FD	FC19899-4	10/21/2024	WI	FD	40
		E-A-SW02L_20241021	FC19899-15	10/21/2024	WS	N	40
	02U	E-A-PW02U_20241023	FC19899-9	10/23/2024	WI	N	40
		E-A-SW02U_20241023	FC19899-20	10/23/2024	WS	N	40
	02Z	E-A-PW02Z_20241023	FC19899-11	10/23/2024	WI	N	40
	03I	E-A-SW03I_20241022	FC19899-16	10/22/2024	WS	N	40
	03Z	E-A-PW03Z_20241023	FC19899-12	10/23/2024	WI	N	40
	04Z	E-A-PW04Z_20241023	FC19899-13	10/23/2024	WI	N	40
		E-A-SW04Z_20241023	FC19899-19	10/23/2024	WS	N	40
	FIELDQC	LORNG_EB217_10212024	FC19899-17	10/21/2024	WQ	EB	40
		LORNG_EB218_10222024	FC19899-8	10/22/2024	WQ	EB	40
		LORNG_EB219_10232024	FC19899-10	10/23/2024	WQ	EB	40
FC20071	01D	E-A-SD01D_00-0.2_20241024	FC20071-1	10/24/2024	SE	N	40
	01E	E-A-SD01E_00-01_20241029	FC20071-5	10/29/2024	SE	N	40
	01H	E-A-SD01H_00-0.2_20241024	FC20071-2	10/24/2024	SE	N	40
	01N	E-A-SD01N_00-0.2_20241024	FC20071-3	10/24/2024	SE	N	40
	02D	E-A-SD02D_00-0.5_20241029	FC20071-6	10/29/2024	SE	N	40
	02E	E-A-SD02E_00-0.5_20241029	FC20071-7	10/29/2024	SE	N	40
	02N	E-A-SD02N_00-0.2_20241024	FC20071-4	10/24/2024	SE	N	40
FC20084	01D	E-A-PW01D_20241024	FC20084-1	10/24/2024	WI	N	40
		E-A-SW01D_20241024	FC20084-8	10/24/2024	WS	N	40
	01E	E-A-PW01E_20241029	FC20084-5	10/29/2024	WI	N	40
		E-A-SW01E_20241029	FC20084-12	10/29/2024	WS	N	40
	01H	E-A-PW01H_20241024	FC20084-2	10/24/2024	WI	N	40
		E-A-SW01H_20241024	FC20084-9	10/24/2024	WS	N	40
	01N	E-A-PW01N_20241024	FC20084-3	10/24/2024	WI	N	40
		E-A-SW01N_20241024	FC20084-10	10/24/2024	WS	N	40
	02D	E-A-SW02D_20241029	FC20084-13	10/29/2024	WS	N	40
	02E	E-A-PW02E_20241029	FC20084-6	10/29/2024	WI	N	40
		E-A-SW02E_20241029	FC20084-14	10/29/2024	WS	N	40
	02N	E-A-PW02N_20241024	FC20084-4	10/24/2024	WI	N	40
		E-A-SW02N_20241024	FC20084-11	10/24/2024	WS	N	40
FC20084	FIELDQC	LORNG_EB220_10242024	FC20084-15	10/24/2024	WQ	EB	40
		LORNG_EB221_10292024	FC20084-7	10/29/2024	WQ	EB	40

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC20139	03L	E-A-PW03L_20241031	FC20139-1	10/31/2024	WI	N	40
		E-A-SD03L_00-01_20241031	FC20139-2	10/31/2024	SE	N	40
		E-A-SW03L_20241031	FC20139-3	10/31/2024	WS	N	40
	FIELDQC	LORNG_EB222_10312024	FC20139-4	10/31/2024	WQ	EB	40

Notes:

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

SE = Sediment; SO = Soil; WI = Porewater; WS = Surface Water; WQ = Water Quality Control

Shaded samples subjected to Stage 4 validation

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4V9681						FC18127											
			Location	01U		01W				01B		01C		01F		01G		01K			
			Sample Date	10/3/2024		10/3/2024				8/15/2024		8/16/2024		8/16/2024		8/16/2024		8/14/2024			
			Sample ID	E-A-SD01U_00-0.5_20241003		E-A-SD01W_00-0.5_20241003		E-A-SD01W_00-0.5_20241003FD		E-A-SD01B_00-0.5_20240815		E-A-SD01C_00-0.5_20240816		E-A-SD01F_00-0.25_20240816		E-A-SD01G_00-0.2_20240816		E-T-SO01K_00-02_20240814			
			QC Code	N		N		FD		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00055	U	0.00057	U	0.0006	U	0.0047	U	0.0016	U	0.00099	U	0.0011	U	0.00093	U		
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.000084	J	0.00016	U	0.00016	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.000093	J	0.0001	U	0.00011	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00041	J		
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00013	J	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00036	J		
		Perfluorononanoic acid (PFNA)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00023	U	0.00023	U	0.00024	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0001	U	0.0001	U	0.00011	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.000075	U	0.000078	U	0.000081	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.000075	U	0.000078	U	0.000081	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.000089	U	0.000092	U	0.000096	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.000094	U	0.000098	U	0.0001	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00024		0.00015	J	0.00014	U	0.0011	J	0.00058	J	0.00049	U	0.00054	U	0.001	J		
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0013		0.00084		0.0011		0.0083		0.0037		0.00013	J	0.00083	J	0.0097			
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00023	U	0.00023	U	0.00024	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.00052	U	0.00053	U	0.00056	U	0.0058	U	0.002	U	0.0012	U	0.0014	U	0.0012	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.00053	U	0.00055	U	0.00057	U	0.0058	U	0.002	U	0.0012	U	0.0014	U	0.0012	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.00087	U	0.0009	U	0.00093	U	0.0058	U	0.002	U	0.0012	U	0.0014	U	0.0012	U		
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0001	U	0.000035	J	0.00006	J	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00016	J		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00023	U	0.00023	U	0.00024	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00014	U	0.00014	U	0.00015	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00023	U	0.00023	U	0.00024	U	0.012	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00023	U	0.00023	U	0.00024	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.00075	U	0.00078	U	0.00081	U	0.012	U	0.004	U	0.0025	U	0.0027	U	0.0023	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0005	U	0.00052	U	0.00054	U	0.012	U	0.004	U	0.0025	U	0.0027	U	0.0023	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00055	U	0.00057	U	0.0006	U	0.0047	U	0.0016	U	0.00099	U	0.0011	U	0.00093	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00038	U	0.00039	U	0.00041	U	0.0047	U	0.0016	U	0.00099	U	0.0011	U	0.00093	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00045	U	0.00047	U	0.00049	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0002	U	0.00021	U	0.00022	U	0.0023	U	0.0008	U	0.00049	U	0.00054	U	0.00046	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0045	U	0.0047	U	0.0049	U	0.0047	U	0.0016	U	0.00099	U	0.0011	U	0.00093	U		

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	C4V9681			FC18127				
			Location	01U	01W		01B	01C	01F	01G	01K
			Sample Date	10/3/2024	10/3/2024		8/15/2024	8/16/2024	8/16/2024	8/16/2024	8/14/2024
			Sample ID	E-A-SD01U_00-0.5_20241003	E-A-SD01W_00-0.5_20241003	E-A-SD01W_00-0.5_20241003FD	E-A-SD01B_00-0.5_20240815	E-A-SD01C_00-0.5_20240816	E-A-SD01F_00-0.25_20240816	E-A-SD01G_00-0.2_20240816	E-T-SO01K_00-02_20240814
			QC Code	N	N	FD	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.00052 U	0.00053 U	0.00056 U	0.0058 U	0.002 U	0.0012 U	0.0014 U	0.0012 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.00053 U	0.00055 U	0.00057 U	0.0058 U	0.002 U	0.0012 U	0.0014 U	0.0012 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00025 U	0.00026 U	0.00027 U	0.0023 U	0.0008 U	0.00049 U	0.00054 U	0.00046 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.00038 U	0.00039 U	0.00041 U	0.0058 U	0.002 U	0.0012 U	0.0014 U	0.0012 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0057 U	0.0059 U	0.0061 U	0.029 U	0.01 U	0.0062 U	0.0068 U	0.0058 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0057 U	0.0059 U	0.0061 U	0.029 U	0.01 U	0.0062 U	0.0068 U	0.0058 U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Date: 1/5/25
Checked by: JAR
Date: 1/10/25

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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG			FC18127															
			Location	01N		01O				01P		01Q		01R		02					
			Sample Date	8/14/2024		8/13/2024				8/13/2024		8/14/2024		8/14/2024		8/17/2024					
			Sample ID	E-T-SO01N_00-02_20240814		E-T-SO01N_00-02_20240814FD		E-A-SD01O_00-0.5_20240813		E-T-SO01O_00-02_20240813		E-A-SD01P_00-01_20240813		E-A-SD01Q_00-0.5_20240814		E-A-SD01R_00-0.5_20240814		E-A-SD02O_00-0.5_20240817			
			QC Code	N		FD		N		N		N		N		N		N			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00089	U	0.00091	U	0.0046	U	0.001	U	0.00097	U	0.0023	U	0.0019	U	0.0043	U		
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00031	J	0.00023	J	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0002	J	0.00014	J	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00026	J	0.00025	J	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00051	J	0.00039	J	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorononanoic acid (PFNA)	MG/KG	0.00028	J	0.00022	J	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00028	J	0.00024	J	0.0012	J	0.00068	J	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.004	J-	0.003	J-	0.0259		0.0011	J	0.00055	J	0.004		0.0019	J	0.0265			
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U		
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0022	U	0.0023	U	0.011	U	0.0025	U	0.0024	U	0.0059	U	0.0047	U	0.011	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0022	U	0.0023	U	0.011	U	0.0025	U	0.0024	U	0.0059	U	0.0047	U	0.011	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00089	U	0.00091	U	0.0046	U	0.001	U	0.00097	U	0.0023	U	0.0019	U	0.0043	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00089	U	0.00091	U	0.0046	U	0.001	U	0.00097	U	0.0023	U	0.0019	U	0.0043	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00045	U	0.00046	U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.00089	U	0.00091	U	0.0046	U	0.001	U	0.00097	U	0.0023	U	0.0019	U	0.0043	U		

Prepared by: AKN
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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG					FC18127														
		Location		01N			01O				01P		01Q		01R		02				
		Sample Date		8/14/2024			8/13/2024				8/13/2024		8/14/2024		8/14/2024		8/17/2024				
		Sample ID		E-T-SO01N_00-02_20240814		E-T-SO01N_00-02_20240814FD	E-A-SD01O_00-0.5_20240813		E-T-SO01O_00-02_20240813		E-A-SD01P_00-01_20240813		E-A-SD01Q_00-0.5_20240814		E-A-SD01R_00-0.5_20240814		E-A-SD02O_00-0.5_20240817				
		QC Code		N		FD	N		N		N		N		N		N				
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier			
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0011	U	0.0011 U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U			
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0011	U	0.0011 U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U			
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00045	U	0.00046 U	0.0023	U	0.0005	U	0.00049	U	0.0012	U	0.00094	U	0.0021	U			
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0011	U	0.0011 U	0.0057	U	0.0013	U	0.0012	U	0.0029	U	0.0024	U	0.0054	U			
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0056	U	0.0057 U	0.029	U	0.0063	U	0.0061	U	0.015	U	0.012	U	0.027	U			
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0056	U	0.0057 U	0.029	U	0.0063	U	0.0061	U	0.015	U	0.012	U	0.027	U			

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG		FC18196								FC18196				
			Location	:O	01A		01CS		01PB		01Y		02A		01A		01B	
			Sample Date	8/13/2024	8/20/2024		8/19/2024		8/19/2024		8/20/2024		8/20/2024		9/12/2024		9/12/2024	
			Sample ID	E-T-SO02O_00-02_20240813	E-A-SD01A_00-0.5_20240820		E-A-SD01CS_00-0.3_20240819		E-A-SD01PB_00-0.3_20240819		E-A-SD01Y_00-01_20240820		E-A-SD02A_00-0.5_20240820		E-T-SO01A_00-02_20240912		E-T-SO01B_00-02_20240912	
			QC Code	N	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.001	U	0.0025	U	0.0015	U	0.0014	U	0.00099	U	0.0017	U	0.0009	U	0.0009	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00027	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0002	J	0.00067	J	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0005	U	0.0184		0.00077	U	0.00068	U	0.00098	J	0.0062		0.0028		0.00019	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0005	U	0.00059	J	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0005	U	0.0017	J	0.00077	U	0.00068	U	0.0005	U	0.00048	J	0.00045	U	0.00045	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0005	U	0.00086	J	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0025	U	0.0061	U	0.0039	U	0.0034	U	0.0025	U	0.0044	U	0.0023	U	0.0022	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0025	U	0.0061	U	0.0039	U	0.0034	U	0.0025	U	0.0044	U	0.0023	U	0.0022	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.001	U	0.0025	U	0.0015	U	0.0014	U	0.00099	U	0.0017	U	0.0009	U	0.0009	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.001	U	0.0025	U	0.0015	U	0.0014	U	0.00099	U	0.0017	U	0.0009	U	0.0009	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.001	U	0.0025	U	0.0015	U	0.0014	U	0.00099	U	0.0017	U	0.0009	U	0.0009	U

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG						FC18196										FC18196							
Location				:O		01A		01CS		01PB		01Y		02A		01A		01B					
Sample Date				8/13/2024		8/20/2024		8/19/2024		8/19/2024		8/20/2024		8/20/2024		9/12/2024		9/12/2024					
Sample ID				E-T-SO02O_00-02_20240813		E-A-SD01A_00-0.5_20240820		E-A-SD01CS_00-0.3_20240819		E-A-SD01PB_00-0.3_20240819		E-A-SD01Y_00-01_20240820		E-A-SD02A_00-0.5_20240820		E-T-SO01A_00-02_20240912		E-T-SO01B_00-02_20240912					
QC Code				N		N		N		N		N		N		N		N					
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier				
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U				
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U				
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0005	U	0.0012	U	0.00077	U	0.00068	U	0.0005	U	0.00087	U	0.00045	U	0.00045	U				
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0012	U	0.0031	U	0.0019	U	0.0017	U	0.0012	U	0.0022	U	0.0011	U	0.0011	U				
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0062	U	0.015	U	0.0097	U	0.0085	U	0.0062	U	0.011	U	0.0056	U	0.0056	U				
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0062	U	0.015	U	0.0097	U	0.0085	U	0.0062	U	0.011	U	0.0056	U	0.0056	U				

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18905															
			Location	01E		01F		01H		01I		01J				01K			
			Sample Date	9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/11/2024		9/12/2024		9/12/2024			
			Sample ID	E-T-SO01E_00-02_20240912		E-T-SO01F_00-02_20240912		E-T-SO01H_00-02_20240912		E-T-SO01I_00-02_20240912		E-A-SD01J_00-01_20240911		E-T-SO01J_00-02_20240912		E-A-SD01K_00-01_20240912		E-A-SD01K_00-01_20240912FD	
			QC Code	N		N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.00083	U	0.00093	U	0.00074	J	0.00091	U	0.0025	U	0.00056	J	0.0015	U	0.0018	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00042	U	0.00046	U	0.0014		0.00045	U	0.0013	U	0.00094	J	0.00041	J	0.00031	J
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00042	U	0.00046	U	0.00074	J	0.00045	U	0.0013	U	0.00019	J	0.00062	J	0.00041	J
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00042	U	0.00046	U	0.00079	J	0.00045	U	0.0013	U	0.00027	J	0.00032	J	0.00026	J
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00042	U	0.00046	U	0.0015		0.00031	J	0.00036	J	0.00058	J	0.00066	J	0.00073	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.00042	U	0.00046	U	0.0012		0.00045	U	0.0013	U	0.00042	J	0.00029	J	0.00091	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00042	U	0.00046	U	0.00025	J	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00042	U	0.00046	U	0.00049	J	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00042	U	0.00046	U	0.0017		0.00045	U	0.0013	U	0.00095	J	0.0021		0.0017	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00058	J	0.00065	J
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.001		0.00046	U	0.0545		0.00092	J	0.0024	J	0.0532		0.315		0.279	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00042	U	0.00046	U	0.00091	J	0.00045	U	0.0013	U	0.00036	J	0.0023		0.0025	J
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00042	U	0.00046	U	0.00094	J	0.00045	U	0.0013	U	0.00049	U	0.0014	J	0.0017	J
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00042	U	0.00046	U	0.0015	J	0.00045	U	0.0013	U	0.00049	U	0.0012	J	0.0012	J
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0019	U	0.0023	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0019	U	0.0023	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0033	J	0.0029	J
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00042	U	0.00046	U	0.00034	J	0.00045	U	0.0013	U	0.00049	U	0.0064		0.0075	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0021	U	0.0023	U	0.0024	U	0.0023	U	0.0063	U	0.0025	U	0.0038	U	0.0045	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0021	U	0.0023	U	0.0024	U	0.0023	U	0.0063	U	0.0025	U	0.0038	U	0.0045	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00083	U	0.00093	U	0.00096	U	0.00091	U	0.0025	U	0.00099	U	0.0015	U	0.0018	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00083	U	0.00093	U	0.00096	U	0.00091	U	0.0025	U	0.00099	U	0.0015	U	0.0018	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.00083	U	0.00093	U	0.00096	U	0.00091	U	0.0025	U	0.00099	U	0.0015	U	0.0018	U

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18905													
			Location	01E		01F		01H		01I		01J				01K	
			Sample Date	9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/11/2024		9/12/2024		9/12/2024	
			Sample ID	E-T-SO01E_00-02_20240912		E-T-SO01F_00-02_20240912		E-T-SO01H_00-02_20240912		E-T-SO01I_00-02_20240912		E-A-SD01J_00-01_20240911		E-T-SO01J_00-02_20240912		E-A-SD01K_00-01_20240912	E-A-SD01K_00-01_20240912FD
			QC Code	N		N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0019	U	0.0023	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0019	U	0.0023	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00042	U	0.00046	U	0.00048	U	0.00045	U	0.0013	U	0.00049	U	0.00076	U	0.00091	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.001	U	0.0012	U	0.0012	U	0.0011	U	0.0032	U	0.0012	U	0.0019	U	0.0023	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0052	U	0.0058	U	0.006	U	0.0057	U	0.016	U	0.0062	U	0.0095	U	0.011	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0052	U	0.0058	U	0.006	U	0.0057	U	0.016	U	0.0062	U	0.0095	U	0.011	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18905															
			Location	01L				01M						01T				01	
			Sample Date	9/11/2024		9/12/2024		9/10/2024				9/12/2024		9/10/2024				9/12/	
			Sample ID	E-A-SD01L_00-01_20240911		E-T-SO01L_00-02_20240912		E-A-SD01M_00-01_20240910		E-A-SD01M_00-01_20240910FD		E-T-SO01M_00-02_20240912		E-A-SD01T_00-01_20240910		E-A-SD01T_00-01_20240910FD		E-A-SD01X_00-01_20240912	
			QC Code	N		N		N		FD		N		N		FD		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0014	U	0.0009	U	0.001	U	0.001	U	0.00086	U	0.0014	U	0.0013	U	0.0017	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00031	J	0.00045	U	0.00051	U	0.00042	J	0.00043	U	0.0007	U	0.00019	J	0.00086	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00044	J	0.00045	U	0.00028	J	0.0004	J	0.00043	U	0.0007	U	0.00066	U	0.00041	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0167		0.00017	J	0.0118		0.012		0.00042	J	0.001	J	0.00093	J	0.0064	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00034	J	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00062	J	0.00045	U	0.00022	J	0.00026	J	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0018	U	0.0011	U	0.0013	U	0.0013	U	0.0011	U	0.0017	U	0.0017	U	0.0021	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0018	U	0.0011	U	0.0013	U	0.0013	U	0.0011	U	0.0017	U	0.0017	U	0.0021	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0018	U	0.0011	U	0.0013	U	0.0013	U	0.0011	U	0.0017	U	0.0017	U	0.0021	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00029	J	0.00045	U	0.00041	J	0.00046	J	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0036	U	0.0023	U	0.0026	U	0.0026	U	0.0021	U	0.0035	U	0.0033	U	0.0043	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0036	U	0.0023	U	0.0026	U	0.0026	U	0.0021	U	0.0035	U	0.0033	U	0.0043	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0014	U	0.0009	U	0.001	U	0.001	U	0.00086	U	0.0014	U	0.0013	U	0.0017	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0014	U	0.0009	U	0.001	U	0.001	U	0.00086	U	0.0014	U	0.0013	U	0.0017	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00072	U	0.00045	U	0.00051	U	0.00051	U	0.00043	U	0.0007	U	0.00066	U	0.00086	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0014	U	0.0009	U	0.001	U	0.001	U	0.00086	U	0.0014	U	0.0013	U	0.0017	U

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18905									
			Location	01L		01M			01T			01	
			Sample Date	9/11/2024	9/12/2024	9/10/2024		9/12/2024	9/10/2024			9/12/	
			Sample ID	E-A-SD01L_00-01_20240911	E-T-SO01L_00-02_20240912	E-A-SD01M_00-01_20240910	E-A-SD01M_00-01_20240910FD	E-T-SO01M_00-02_20240912	E-A-SD01T_00-01_20240910	E-A-SD01T_00-01_20240910FD		E-A-SD01X_00-01_20240912	
			QC Code	N	N	N	FD	N	N	FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0018 U	0.0011 U	0.0013 U	0.0013 U	0.0011 U	0.0017 U	0.0017 U		0.0021 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0018 U	0.0011 U	0.0013 U	0.0013 U	0.0011 U	0.0017 U	0.0017 U		0.0021 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00072 U	0.00045 U	0.00051 U	0.00051 U	0.00043 U	0.0007 U	0.00066 U		0.00086 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0018 U	0.0011 U	0.0013 U	0.0013 U	0.0011 U	0.0017 U	0.0017 U		0.0021 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0089 U	0.0056 U	0.0064 U	0.0064 U	0.0054 U	0.0087 U	0.0083 U		0.011 U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0089 U	0.0056 U	0.0064 U	0.0064 U	0.0054 U	0.0087 U	0.0083 U		0.011 U	

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG								FC18905													
Location				.X		02A		02H		02K		02M				03K		01			
Sample Date				2024		9/12/2024		9/12/2024		9/11/2024		9/11/2024		9/12/2024		9/11/2024		9/20/			
Sample ID				E-A-SD01X_00-01_20240912FD		E-T-SO02A_00-02_20240912		E-T-SO02H_00-02_20240912		E-T-SO02K_00-02_20240911		E-A-SD02M_00-01_20240911		E-T-SO02M_00-02_20240912		E-T-SO03K_00-02_20240911		E-T-SO01P_00-02_20240920			
QC Code				FD		N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		Perfluorobutanoic acid (PFBA)	MG/KG	0.0016	U	0.00097	U	0.00041	J	0.001	U	0.00097	U	0.0015	U	0.001	U	0.00092	U		
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00079	U	0.00049	U	0.00079	J	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00079	U	0.00049	U	0.00041	J	0.0005	U	0.00048	U	0.00073	U	0.00015	J	0.00046	U		
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00079	U	0.00049	U	0.00044	J	0.0005	U	0.00048	U	0.00027	J	0.00014	J	0.00014	J		
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00079	U	0.00049	U	0.00074	J	0.001	J	0.00048	U	0.00073	U	0.00046	J	0.00021	J		
		Perfluorononanoic acid (PFNA)	MG/KG	0.00079	U	0.00049	U	0.0007	J	0.0005	U	0.00048	U	0.00025	J	0.00024	J	0.00014	J		
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00079	U	0.00049	U	0.00016	J	0.0005	U	0.00048	U	0.00031	J	0.0005	U	0.00046	U		
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00079	U	0.00049	U	0.00025	J	0.00033	J	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00038	J	0.00019	J	0.0012		0.00026	J	0.00048	U	0.00073	U	0.0028		0.00018	J		
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0066		0.0069		0.0307		0.00043	J	0.0002	J	0.00034	J	0.0034		0.00039	J		
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00079	U	0.00049	U	0.00054	J	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00079	U	0.00049	U	0.00057	J	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00079	U	0.00049	U	0.00077	J	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
PFAS	T	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00079	U	0.00049	U	0.00023	J	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.004	U	0.0024	U	0.0024	U	0.0025	U	0.0024	U	0.0036	U	0.0025	U	0.0023	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.004	U	0.0024	U	0.0024	U	0.0025	U	0.0024	U	0.0036	U	0.0025	U	0.0023	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0016	U	0.00097	U	0.00095	U	0.001	U	0.00097	U	0.0015	U	0.001	U	0.00092	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0016	U	0.00097	U	0.00095	U	0.001	U	0.00097	U	0.0015	U	0.001	U	0.00092	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0016	U	0.00097	U	0.00095	U	0.001	U	0.00097	U	0.0015	U	0.001	U	0.00092	U		

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Date: 1/5/25
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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG								FC18905													
Location				.X		02A		02H		02K		02M				03K		01			
Sample Date				2024		9/12/2024		9/12/2024		9/11/2024		9/11/2024		9/12/2024		9/11/2024		9/20/			
Sample ID				E-A-SD01X_00-01_20240912FD		E-T-SO02A_00-02_20240912		E-T-SO02H_00-02_20240912		E-T-SO02K_00-02_20240911		E-A-SD02M_00-01_20240911		E-T-SO02M_00-02_20240912		E-T-SO03K_00-02_20240911		E-T-SO01P_00-02_20240920			
QC Code				FD		N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00079	U	0.00049	U	0.00047	U	0.0005	U	0.00048	U	0.00073	U	0.0005	U	0.00046	U		
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.002	U	0.0012	U	0.0012	U	0.0013	U	0.0012	U	0.0018	U	0.0013	U	0.0012	U		
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0099	U	0.0061	U	0.0059	U	0.0063	U	0.006	U	0.0091	U	0.0063	U	0.0058	U		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0099	U	0.0061	U	0.0059	U	0.0063	U	0.006	U	0.0091	U	0.0063	U	0.0058	U		

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC19237												FC1	
			Location	.P		01V		01Z		02N		02P				02V	02Z
			Sample Date	2024		9/19/2024		9/19/2024		9/19/2024		9/20/2024				9/19/2024	9/19/2024
			Sample ID	E-T-SO01P_00-02_20240920FD		E-A-SD01V_00-01_20240919		E-A-SD01Z_00-0.5_20240919		E-T-SO02N_00-02_20240919		E-T-SO02P_00-02_20240920		E-T-SO02P_00-02_20240920FD		E-A-SD02V_00-01_20240919	E-A-SD02Z_00-0.5_20240919
			QC Code	FD		N		N		N		N		FD		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluorobutanoic acid (PFBA)	MG/KG	0.00092	U	0.00092	U	0.0014	U	0.00058	J	0.00093	U	0.00095	U	0.0015	U	0.0014	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.0012		0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.0004	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00044	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0002	J	0.00046	U	0.00068	U	0.00069	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00048	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00016	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00046	U	0.00046	U	0.00027	J	0.00046	J	0.00047	U	0.00048	U	0.00074	J	0.00072	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00029	J	0.00038	J	0.0017		0.0165		0.00047	U	0.00048	U	0.005		0.006	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00063	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.0002	J	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	J	0.00072	U
PFAS	T	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00042	J	0.00072	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0023	U	0.0023	U	0.0034	U	0.0023	U	0.0023	U	0.0024	U	0.0039	U	0.0036	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0023	U	0.0023	U	0.0034	U	0.0023	U	0.0023	U	0.0024	U	0.0039	U	0.0036	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.00092	U	0.00092	U	0.0014	U	0.00093	U	0.00093	U	0.00095	U	0.0015	U	0.0014	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.00092	U	0.00092	U	0.0014	U	0.00093	U	0.00093	U	0.00095	U	0.0015	U	0.0014	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.00092	U	0.00092	U	0.0014	U	0.00093	U	0.00093	U	0.00095	U	0.0015	U	0.0014	U

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG				FC19237														FC1	
Location				.P		01V		01Z		02N		02P				02V		02Z	
Sample Date				2024		9/19/2024		9/19/2024		9/19/2024		9/20/2024				9/19/2024		9/19/2024	
Sample ID				E-T-SO01P_00-02_20240920FD		E-A-SD01V_00-01_20240919		E-A-SD01Z_00-0.5_20240919		E-T-SO02N_00-02_20240919		E-T-SO02P_00-02_20240920		E-T-SO02P_00-02_20240920FD		E-A-SD02V_00-01_20240919		E-A-SD02Z_00-0.5_20240919	
QC Code				FD		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00046	U	0.00046	U	0.00068	U	0.00046	U	0.00047	U	0.00048	U	0.00077	U	0.00072	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0011	U	0.0011	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0019	U	0.0018	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0057	U	0.0057	U	0.0085	U	0.0058	U	0.0058	U	0.0059	U	0.0096	U	0.009	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0057	U	0.0057	U	0.0085	U	0.0058	U	0.0058	U	0.0059	U	0.0096	U	0.009	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

				SDG	9237				FC19346						FC1	
				Location	03V		03Z		01Q		02Q		03P		01I	
				Sample Date	9/19/2024		9/19/2024		10/2/2024		10/2/2024		10/2/2024		10/22/2024	
				Sample ID	E-A-SD03V_00-01_20240919		E-A-SD03Z_00-0.5_20240919		E-T-SO01Q_00-02_20241002		E-T-SO02Q_00-02_20241002		E-T-SO03P_00-02_20241002		E-A-SD01I_00-0.2_20241022	
				QC Code	N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.001	U	0.0013	U	0.00097	U	0.001	U	0.00098	U	0.00099	U	0.0028	J	0.0026	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00017	J	0.00067	U	0.00019	J	0.00023	J	0.00049	U	0.0005	U	0.0046		0.0013	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00015	J	0.00016	J	0.0018	J	0.0013	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.00015	J	0.00012	J	0.0005	U	0.0015	J	0.0013	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0005	U	0.00067	U	0.00026	J	0.00032	J	0.00017	J	0.00012	J	0.0025	J	0.0013	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.0005	U	0.00067	U	0.00029	J	0.00029	J	0.00023	J	0.00018	J	0.0011	J	0.0013	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00042	J	0.00039	J	0.0017	U	0.0013	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00013	J	0.00013	J	0.0017	U	0.0013	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00016	J	0.00016	J	0.0017	U	0.0013	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0005	U	0.00067	U	0.00022	J	0.0005	U	0.00051	J	0.00035	J	0.0032	J	0.0013	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0018		0.0036		0.0038		0.0038		0.001	J	0.00078	J	0.144		0.00091	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0025	U	0.0033	U	0.0024	U	0.0025	U	0.0025	U	0.0025	U	0.0085	U	0.0064	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0025	U	0.0033	U	0.0024	U	0.0025	U	0.0025	U	0.0025	U	0.0085	U	0.0064	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.001	U	0.0013	U	0.00097	U	0.001	U	0.00098	U	0.00099	U	0.0034	U	0.0026	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.001	U	0.0013	U	0.00097	U	0.001	U	0.00098	U	0.00099	U	0.0034	U	0.0026	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.001	U	0.0013	U	0.00097	U	0.001	U	0.00098	U	0.00099	U	0.0034	U	0.0026	U

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Date: 1/5/25
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Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG	9237				FC19346										FC1
		Location	03V		03Z		01Q				02Q				03P		01I
		Sample Date	9/19/2024		9/19/2024		10/2/2024				10/2/2024				10/2/2024		10/22/2024
		Sample ID	E-A-SD03V_00-01_20240919		E-A-SD03Z_00-0.5_20240919		E-T-SO01Q_00-02_20241002		E-T-SO01Q_00-02_20241002FD		E-T-SO02Q_00-02_20241002		E-T-SO02Q_00-02_20241002FD		E-T-SO03P_00-02_20241002		E-A-SD01I_00-0.2_20241022
		QC Code	N		N		N		FD		N		FD		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0005	U	0.00067	U	0.00049	U	0.0005	U	0.00049	U	0.0005	U	0.0017	U	0.0013	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0013	U	0.0017	U	0.0012	U	0.0012	U	0.0012	U	0.0012	U	0.0043	U	0.0032	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0063	U	0.0084	U	0.0061	U	0.0062	U	0.0061	U	0.0062	U	0.021	U	0.016	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0063	U	0.0084	U	0.0061	U	0.0062	U	0.0061	U	0.0062	U	0.021	U	0.016	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
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Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	9896		FC19896															
			Location	01S		02I		02J		02L		02U		03I		04Z		01D			
			Sample Date	10/23/2024		10/22/2024		10/22/2024		10/21/2024		10/23/2024		10/22/2024		10/23/2024		10/24/2024			
			Sample ID	E-A-SD01S_00-0.2_20241023		E-A-SD02I_00-0.2_20241022		E-A-SD02J_00-0.2_20241022		E-A-SD02L_00-0.2_20241021		E-A-SD02U_00-0.2_20241023		E-A-SD03I_00-0.2_20241022		E-A-SD04Z_00-0.2_20241023		E-A-SD01D_00-0.2_20241024			
			QC Code	N		N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0016	U	0.0015	U	0.0056	U	0.001	U	0.001	U	0.0016	U	0.0015	U	0.0042	U		
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorononanoic acid (PFNA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0008	U	0.00073	U	0.0014	J	0.0005	U	0.00051	U	0.0003	J	0.00077	U	0.0021	U		
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0008	U	0.00073	U	0.0017	J	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0027		0.00073	U	0.0102		0.00066	J	0.0015		0.0008	U	0.0022		0.0028	J		
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U		
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.004	U	0.0037	U	0.014	U	0.0025	U	0.0025	U	0.004	U	0.0039	U	0.011	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.004	U	0.0037	U	0.014	U	0.0025	U	0.0025	U	0.004	U	0.0039	U	0.011	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0016	U	0.0015	U	0.0056	U	0.001	U	0.001	U	0.0016	U	0.0015	U	0.0042	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0016	U	0.0015	U	0.0056	U	0.001	U	0.001	U	0.0016	U	0.0015	U	0.0042	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0016	U	0.0015	U	0.0056	U	0.001	U	0.001	U	0.0016	U	0.0015	U	0.0042	U		

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	9896		FC19896													
			Location	01S		02I		02J		02L		02U		03I		04Z		01D	
			Sample Date	10/23/2024		10/22/2024		10/22/2024		10/21/2024		10/23/2024		10/22/2024		10/23/2024		10/24/2024	
			Sample ID	E-A-SD01S_00-0.2_20241023		E-A-SD02I_00-0.2_20241022		E-A-SD02J_00-0.2_20241022		E-A-SD02L_00-0.2_20241021		E-A-SD02U_00-0.2_20241023		E-A-SD03I_00-0.2_20241022		E-A-SD04Z_00-0.2_20241023		E-A-SD01D_00-0.2_20241024	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0008	U	0.00073	U	0.0028	U	0.0005	U	0.00051	U	0.0008	U	0.00077	U	0.0021	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.002	U	0.0018	U	0.007	U	0.0013	U	0.0013	U	0.002	U	0.0019	U	0.0053	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.01	U	0.0092	U	0.035	U	0.0063	U	0.0063	U	0.01	U	0.0097	U	0.027	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.01	U	0.0092	U	0.035	U	0.0063	U	0.0063	U	0.01	U	0.0097	U	0.027	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20071									FC20071		FC20139	
			Location	01E		01H		01N		02D		02E		02N		03L	
			Sample Date	10/29/2024		10/24/2024		10/24/2024		10/29/2024		10/29/2024		10/24/2024		10/31/2024	
			Sample ID	E-A-SD01E_00-01_20241029		E-A-SD01H_00-0.2_20241024		E-A-SD01N_00-0.2_20241024		E-A-SD02D_00-0.5_20241029		E-A-SD02E_00-0.5_20241029		E-A-SD02N_00-0.2_20241024		E-A-SD03L_00-01_20241031	
			QC Code	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0017	U	0.0011	U	0.003	U	0.0028	U	0.0015	U	0.0011	U	0.0014	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00084	U	0.00055	U	0.00085	J	0.0014	U	0.00076	U	0.00053	U	0.00064	J
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0021		0.00089	J	0.0127		0.0013	J	0.00063	J	0.00039	J	0.0181	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.00057	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0042	U	0.0028	U	0.0076	U	0.0069	U	0.0038	U	0.0026	U	0.0035	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0042	U	0.0028	U	0.0076	U	0.0069	U	0.0038	U	0.0026	U	0.0035	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0017	U	0.0011	U	0.003	U	0.0028	U	0.0015	U	0.0011	U	0.0014	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0017	U	0.0011	U	0.003	U	0.0028	U	0.0015	U	0.0011	U	0.0014	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0017	U	0.0011	U	0.003	U	0.0028	U	0.0015	U	0.0011	U	0.0014	U

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC20071								FC20071		FC20139	
		Location		01E		01H		01N		02D		02E		02N		03L	
		Sample Date		10/29/2024		10/24/2024		10/24/2024		10/29/2024		10/29/2024		10/24/2024		10/31/2024	
		Sample ID		E-A-SD01E_00-01_20241029		E-A-SD01H_00-0.2_20241024		E-A-SD01N_00-0.2_20241024		E-A-SD02D_00-0.5_20241029		E-A-SD02E_00-0.5_20241029		E-A-SD02N_00-0.2_20241024		E-A-SD03L_00-01_20241031	
		QC Code		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00084	U	0.00055	U	0.0015	U	0.0014	U	0.00076	U	0.00053	U	0.0007	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0021	U	0.0014	U	0.0038	U	0.0034	U	0.0019	U	0.0013	U	0.0018	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.011	U	0.0069	U	0.019	U	0.017	U	0.0095	U	0.0066	U	0.0088	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.011	U	0.0069	U	0.019	U	0.017	U	0.0095	U	0.0066	U	0.0088	U

Notes:

N = Normal Field Sample; FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

MG/KG = milligrams per kilograms.

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 1/5/25
Checked by: JAR
Date: 1/10/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
C4V9681	E1633DR	T	AFNL05	E-A-SD01W_00-0.5-20241003FD	Perfluorohexanesulfonic acid (PFHxS)	0.0001	J	0.00014	U	LBL	MG/KG
FC18126	E1633DR	T	FC18126-1	E-A-SW01B_20240815	Perfluoropentanoic acid (PFPeA)	2.3	J	2.4	U	SNL	NG/L
					Perfluorohexanoic acid (PFHxA)	0.84	J	0.84	J	IAG	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.79	J	0.79	J	SNL	NG/L
			FC18126-2	E-A-SW01C_20240816	Perfluoropentanoic acid (PFPeA)	4.2	J	4.2	U	SNL	NG/L
			FC18126-3	E-A-SW01F_20240816	Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	U	SNL	NG/L
			FC18126-6	E-A-SW01P_20240813	Perfluorodecanoic acid (PFDA)	0.57	J	2.1	U	IAG, SNL	NG/L
			FC18126-7	E-A-SW01Q_20240814	Perfluoroheptanesulfonic acid (PFHpS)	1.3	J	2.3	U	SNL	NG/L
FC18127	E1633DR	T	FC18127-3	E-A-SD01O_00-0.5_20240813	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0012	J	IAG	MG/KG
			FC18127-7	E-A-SO01K_00-02_20240814	Perfluorooctane sulfonamide (PFOSA)	0.0002	J	0.00016	J	IAG	MG/KG
			FC18127-8	E-A-SO01N_00-02_20240814	Perfluorooctanesulfonic acid (PFOS)	0.004	=	0.004	J-	MSL	MG/KG
			FC18127-9	E-A-SO01N_00-02_20240814FD	Perfluorooctanesulfonic acid (PFOS)	0.003	=	0.003	J-	MSL	MG/KG
FC18138	E1633DR	T	FC18138-1	E-A-PW01B_20240815-SD	Perfluorobutanoic acid (PFBA)	2.3	J	2.3	R	PJ	NG/L
					Perfluoropentanoic acid (PFPeA)	2.8	J	2.8	R	PJ	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	R	PJ	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	R	PJ	NG/L
					Perfluorooctanoic acid (PFOA)	1.7	J	1.7	R	PJ	NG/L
					Perfluorononanoic acid (PFNA)	0.66	J	0.66	R	PJ	NG/L
					Perfluorodecanoic acid (PFDA)	2	U	2	R	PJ	NG/L
					Perfluoroundecanoic acid (PFUnA)	2	U	2	R	PJ	NG/L
					Perfluorododecanoic acid (PFDoA)	2	U	2	R	PJ	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	R	PJ	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	R	PJ	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	U	2	R	PJ	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.1	U	4.1	R	PJ	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.8	J	3.8	R	PJ	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	U	2	R	PJ	NG/L
					Perfluorooctanesulfonic acid (PFOS)	5.9	=	5.9	R	PJ	NG/L
					Perfluorononanesulfonic acid (PFNS)	2	U	2	R	PJ	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	R	PJ	NG/L

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Checked by: JAR
Date: 1/10/25

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FC18138	E1633DR	T	FC18138-1	E-A-PW01B_20240815-SD	Perfluorododecanesulfonic acid (PFDoS)	4.1	U	4.1	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8.2	U	8.2	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	8.2	U	8.2	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	8.2	U	8.2	R	PJ	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	U	2	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.1	U	4.1	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.1	U	4.1	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.1	U	4.1	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	R	PJ	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	2	U	2	R	PJ	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	4.1	U	4.1	R	PJ	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2	U	2	R	PJ	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	4.1	U	4.1	R	PJ	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.1	U	4.1	R	PJ	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.1	U	4.1	R	PJ	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.1	U	4.1	R	PJ	NG/L
			FC18138-1	E-A-PW01B_20240815-SD	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2	U	2	R	PJ	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	10	U	10	R	PJ	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	20	U	20	R	PJ	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	20	U	20	R	PJ	NG/L
					Perfluorobutanoic acid (PFBA)	6.6	J	6.6	R	PJ	NG/L

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FC18138	E1633DR	T	FC18138-2	E-A-PW01O_20240813-SD	Perfluoropentanoic acid (PFPeA)	42.9	=	42.9	R	PJ	NG/L
					Perfluorohexanoic acid (PFHxA)	18	=	18	R	PJ	NG/L
					Perfluoroheptanoic acid (PFHpA)	8.5	=	8.5	R	PJ	NG/L
					Perfluorooctanoic acid (PFOA)	12.1	=	12.1	R	PJ	NG/L
					Perfluorononanoic acid (PFNA)	1.5	J	1.5	R	PJ	NG/L
					Perfluorodecanoic acid (PFDA)	2.4	U	2.4	R	PJ	NG/L
					Perfluoroundecanoic acid (PFUnA)	2.4	U	2.4	R	PJ	NG/L
					Perfluorododecanoic acid (PFDoA)	2.4	U	2.4	R	PJ	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2.4	U	2.4	R	PJ	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.4	U	2.4	R	PJ	NG/L
					Perfluorobutanesulfonic acid (PFBS)	6.1	=	6.1	R	PJ	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	9.5	=	9.5	R	PJ	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	70.6	=	70.6	R	PJ	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	8.2	=	8.2	R	PJ	NG/L
					Perfluorooctanesulfonic acid (PFOS)	368	=	368	R	PJ	NG/L
					Perfluorononanesulfonic acid (PFNS)	2.4	U	2.4	R	PJ	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2.4	U	2.4	R	PJ	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	4.8	U	4.8	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	9.5	U	9.5	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	9.5	U	9.5	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	9.5	U	9.5	R	PJ	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4	U	2.4	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.8	U	4.8	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.8	U	4.8	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.8	U	4.8	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	R	PJ	NG/L

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FC18138	E1633DR	T	FC18138-2	E-A-PW01O_20240813-SD	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	24	U	24	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	24	U	24	R	PJ	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	2.4	U	2.4	R	PJ	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	4.8	U	4.8	R	PJ	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.4	U	2.4	R	PJ	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	4.8	U	4.8	R	PJ	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.8	U	4.8	R	PJ	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.8	U	4.8	R	PJ	NG/L
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.8	U	4.8	R	PJ	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.4	U	2.4	R	PJ	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	12	U	12	R	PJ	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	24	U	24	R	PJ	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	24	U	24	R	PJ	NG/L

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FC18138	E1633DR	T	FC18138-3	E-A-PW01P_20240813-SD	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	R	PJ	NG/L
					Perfluoropentanoic acid (PFPeA)	11	=	11	R	PJ	NG/L
					Perfluorohexanoic acid (PFHxA)	5.5	=	5.5	R	PJ	NG/L
					Perfluoroheptanoic acid (PFHpA)	4.1	J	4.1	R	PJ	NG/L
					Perfluorooctanoic acid (PFOA)	4.7	=	4.7	R	PJ	NG/L
					Perfluorononanoic acid (PFNA)	1.8	J	1.8	R	PJ	NG/L
					Perfluorodecanoic acid (PFDA)	2.2	U	2.2	R	PJ	NG/L
					Perfluoroundecanoic acid (PFUnA)	2.2	U	2.2	R	PJ	NG/L
					Perfluorododecanoic acid (PFDoA)	2.2	U	2.2	R	PJ	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2.2	U	2.2	R	PJ	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2.2	U	2.2	R	PJ	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	R	PJ	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	R	PJ	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	24.1	=	24.1	R	PJ	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	R	PJ	NG/L
					Perfluorooctanesulfonic acid (PFOS)	144	=	144	R	PJ	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.2	J	1.2	R	PJ	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2.2	U	2.2	R	PJ	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	4.4	U	4.4	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8.9	U	8.9	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	8.9	U	8.9	R	PJ	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	8.9	U	8.9	R	PJ	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.3	J	1.3	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.4	U	4.4	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.4	U	4.4	R	PJ	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	R	PJ	NG/L

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FC18138	E1633DR	T	FC18138-3	E-A-PW01P_20240813-SD	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	R	PJ	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	R	PJ	NG/L
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	2.2	U	2.2	R	PJ	NG/L
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	4.4	U	4.4	R	PJ	NG/L
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.2	U	2.2	R	PJ	NG/L
					Perfluoro-4-methoxybutanoic acid (PFMBA)	4.4	U	4.4	R	PJ	NG/L
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.4	U	4.4	R	PJ	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.4	U	4.4	R	PJ	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.4	U	4.4	R	PJ	NG/L
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.2	U	2.2	R	PJ	NG/L
					3-Perfluoropropyl propanoic acid (3:3FTCA)	11	U	11	R	PJ	NG/L
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	22	U	22	R	PJ	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	22	U	22	R	PJ	NG/L
			FC18138-4	E-A-PW01Q_20240814	Perfluorohexanoic acid (PFHxA)	4	J	4	U	EBL	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.1	J	2.5	U	EBG	NG/L
					Perfluorooctanoic acid (PFOA)	3.6	J	3.6	U	EBG	NG/L
					Perfluorononanoic acid (PFNA)	0.85	J	2.5	U	EBL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	50.2	=	50.2	J+	EBG	NG/L

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FC18138	E1633DR	T	FC18138-5	E-A-PW01R_20240814	Perfluorohexanoic acid (PFHxA)	5.3	=	5.3	J+	EBL	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.2	J	3.2	U	EBG	NG/L
					Perfluorooctanoic acid (PFOA)	4.7	=	4.7	J+	EBG	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.8	U	EBL	NG/L
					Perfluorodecanoic acid (PFDA)	0.64	J	0.64	J	IAG	NG/L
					Perfluorooctanesulfonic acid (PFOS)	74	=	74	J+	EBG	NG/L
FC18138R	E1633DR	T	FC18138-1	E-A-PW01B_20240815	Perfluorohexanoic acid (PFHxA)	1.3	J	1.3	J	IAG	NG/L
FC18223	E1633DR	T	FC18223-6	E-A-PW02A_20240820	Perfluorodecanoic acid (PFDA)	0.76	J	0.76	J	IAG	NG/L
FC18225	E1633DR	T	FC18225-2	E-A-PW01C_20240816	Perfluorooctanesulfonic acid (PFOS)	2.8	J	2.8	U	EBL	NG/L
			FC18225-4	E-A-SW01CS_20240819	Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	IAG	NG/L
			FC18225-6	E-A-SW01Y_20240820	Perfluorooctane sulfonamide (PFOSA)	0.86	J	0.86	J	IAG	NG/L
			FC18225-7	E-A-SW02A_20240820	Perfluorooctanoic acid (PFOA)	1.6	J	1.6	J	IAG	NG/L
FC18905	E1633DR	T	FC18905-1	E-A-SD01J_00-01_20240911	Perfluorooctanoic acid (PFOA)	0.0004	J	0.00036	J	IAG	MG/KG
			FC18905-13	E-A-SD01K_00-01_20240912	Perfluorododecanesulfonic acid (PFDoS)	0.0012	J	0.0012	J	IAG	MG/KG
			FC18905-14	E-A-SD01K_00-01_20240912FD	Perfluorononanesulfonic acid (PFNS)	0.0025	=	0.0025	J	IAG	MG/KG
			FC18905-2	E-A-SD01L_00-01_20240911	Perfluorooctanoic acid (PFOA)	0.0003	J	0.00031	J	IAG	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0003	J	0.00029	J	IAG	MG/KG
			FC18905-4	E-A-SD01M_00-01_20240910FD	Perfluorooctanoic acid (PFOA)	0.0004	J	0.00042	J	IAG	MG/KG
			FC18905-6	E-A-SD01T_00-01_20240910FD	Perfluorooctanoic acid (PFOA)	0.0002	J	0.00019	J	IAG	MG/KG
			FC18905-16	E-T-SO01B_00-02_20240912	Perfluorooctanoic acid (PFOA)	0.0003	J	0.00027	J	IAG	MG/KG
			FC18905-18	E-T-SO01H_00-02_20240912	Perfluorododecanesulfonic acid (PFDoS)	0.0015	=	0.0015	J	IAG	MG/KG
			FC18905-8	E-T-SO01I_00-02-20240912	Perfluorooctanoic acid (PFOA)	0.0003	J	0.00031	J	IAG	MG/KG
			FC18905-9	E-T-SO01J_00-02_20240912	Perfluorohexanoic acid (PFHxA)	0.0002	J	0.00019	J	IAG	MG/KG
			FC18905-21	E-T-SO02H_00-02_20240912	Perfluorododecanesulfonic acid (PFDoS)	0.0008	J	0.00077	J	IAG	MG/KG
			FC18905-11	E-T-SO02K_00-02_20240911	Perfluorooctanoic acid (PFOA)	0.001	J	0.001	J	IAG	MG/KG
					Perfluoroundecanoic acid (PFUnA)	0.0003	J	0.00033	J	IAG	MG/KG
			FC18905-22	E-T-SO02M_00-02_20240912	Perfluoroheptanoic acid (PFHpA)	0.0003	J	0.00027	J	IAG	MG/KG
					Perfluorodecanoic acid (PFDA)	0.0003	J	0.00031	J	IAG	MG/KG
					Perfluoroheptanoic acid (PFHpA)	69.3	=	69.3	J-	MSL	NG/L

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FC18906	E1633DR	T	FC18906-2	E-A-SW01K_20240912	Perfluorooctanoic acid (PFOA)	76.9	=	76.9	J-	MSL	NG/L
					Perfluorononanesulfonic acid (PFNS)	18.4	=	18.4	J	MSL, FDD	NG/L
					Perfluorodecanesulfonic acid (PFDS)	29.8	=	29.8	J	MSL, FDD	NG/L
					Perfluorooctane sulfonamide (PFOSA)	23.9	=	23.9	J-	MSL	NG/L
			FC18906-3	E-A-SW01K_20240912FD	Perfluoroheptanoic acid (PFHpA)	65.7	=	65.7	J-	MSL	NG/L
					Perfluorooctanoic acid (PFOA)	73.4	=	73.4	J-	MSL	NG/L
					Perfluorononanesulfonic acid (PFNS)	13.2	=	13.2	J	MSL, FDD	NG/L
					Perfluorodecanesulfonic acid (PFDS)	14.6	=	14.6	J	MSL, FDD	NG/L
					Perfluorooctane sulfonamide (PFOSA)	19.8	=	19.8	J-	MSL	NG/L
			FC18906-4	E-A-SW01M_20240910	Perfluorodecanesulfonic acid (PFDS)	3.9	=	3.9	J	IAG	NG/L
			FC18906-5	E-A-SW01M_20240910FD	Perfluorodecanesulfonic acid (PFDS)	3.1	J	3.1	J	IAG	NG/L
			FC18906-6	E-A-SW01T_20240910	Perfluorohexanoic acid (PFHxA)	2.5	J	2.5	J	IAG	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.9	J	0.9	J	IAG	NG/L
FC19237	E1633DR	T	FC19237-9	E-T-SO02N_00-02_20240919	Perfluorodecanesulfonic acid (PFDS)	0.0002	J	0.0002	J	IAG	MG/KG
FC19238	E1633DR	T	FC19238-1	E-A-PW01V_20240919	Perfluorooctane sulfonamide (PFOSA)	1.4	J	1.4	J	IAG	NG/L
			FC19238-4	E-A-SW01Z_20240919	Perfluorononanoic acid (PFNA)	0.77	J	0.77	J	IAG	NG/L
			FC19238-5	E-A-SW02Z_20240919	Perfluoroheptanesulfonic acid (PFHpS)	0.97	J	0.97	J	IAG	NG/L
FC19346	E1633DR	T	FC19346-1	E-A-SW01V_20241002	Perfluorodecanesulfonic acid (PFDS)	0.71	J	0.71	J	IAG	NG/L
			FC19346-7	E-T-SO02Q_00-02_20241002	Perfluorohexanoic acid (PFHxA)	0.0002	J	0.00015	J	IAG	MG/KG
			FC19346-8	E-T-SO02Q_00-02_20241002FD	Perfluorohexanoic acid (PFHxA)	0.0002	J	0.00016	J	IAG	MG/KG
			FC19346-9	E-T-SO03P_00-02_20241002	Perfluorohexanoic acid (PFHxA)	0.0018	J	0.0018	J	IAG	MG/KG
FC19896	E1633DR	T	FC19896-3	E-A-SD02L_00-0.2_20241021	Perfluorooctanesulfonic acid (PFOS)	0.0007	J	0.00066	J	IAG	MG/KG
			FC19896-4	E-A-SD03I_00-0.2_20241022	Perfluorodecanoic acid (PFDA)	0.0003	J	0.0003	J	IAG	MG/KG
FC19899	E1633DR	T	FC19899-1	E-A-PW01I_20241022	Perfluorooctanesulfonic acid (PFOS)	1.9	J	2	U	LBL	NG/L
			FC19899-14	E-A-SW02I_20241022	Perfluorohexanoic acid (PFHxA)	0.65	J	0.65	J	IAG	NG/L
			FC19899-20	E-A-SW02U_20241023	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	7.8	U	7.8	UJ	EISH	NG/L
					Perfluorotetradecanoic acid (PFTeDA)	2	U	2	R	EISL	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	U	2	UJ	EISL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2	U	2	UJ	EISL	NG/L

Prepared by:AKN
Date:1/5/25
Checked by: JAR
Date: 1/10/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC19899	E1633DR	T	FC19899-16	E-A-SW03I_20241022	Perfluorononanesulfonic acid (PFNS)	2	U	2	UJ	EISL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	EISL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	4	U	4	UJ	EISL	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8	U	8	UJ	EISH	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	R	EISL	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4	U	4	UJ	EISL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	R	EISL	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	R	EISL	NG/L
FC20139	E1633DR	T	FC20139-1	E-A-PW03L_20241031	Perfluorononanesulfonic acid (PFNS)	0.63	J	0.63	J	IAG	NG/L
			FC20139-2	E-A-SD03L_00-01_20241031	Perfluorooctane sulfonamide (PFOSA)	0.0006	J	0.00057	J	IAG	MG/KG
			FC20139-3	E-A-SW03L_20241031	Perfluorodecanesulfonic acid (PFDS)	1.9	J	1.9	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.2	J	1.2	J	IAG	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

MG/KG = Milligram per kilogram

NG/L = Nanogram per liter

Reason Codes:

EBG = Detected in equipment blank at concentration greater than reporting limit

EBL = Detected in equipment blank at concentration less than reporting limit

EISH = Extracted internal standard response greater than upper control limit

EISL = Extracted internal standard response less than lower control limit

FDD = Field duplicate relative percent difference (RPD) criteria exceeded

IAG = Transition ion ratio outside limits

LBL = Laboratory blank contamination less than reporting limit

MSL = Matrix spike recovery low

PJ = Professional judgment

SNL = Signal to noise ratio low

Prepared by:AKN
Date:1/5/25
Checked by: JAR
Date: 1/10/25

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
C4V9681	E-A-PW01U_20241003	E-A-PW01U_20241003FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	9.2		9.2		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	16		16		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	21		22		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	10		10		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	27		27		0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.2	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.97	U	0.83	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.4	U	1.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.97	U	0.83	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.4	U	1.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.97	U	0.83	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	6.7		6.9		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8.8		8.5		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	170		150		12	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.1		2.2		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	97		100		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.3	U	1.1	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.3	U	1.1	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.97	U	0.83	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	3.6	U	3.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	3.7	U	3.2	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5.4	U	4.6	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.7	U	0.29	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1.4	U	1.2	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1.4	U	1.2	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1.4	U	0.81	J	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.97	U	1.1	J	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	9.7	U	8.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	9.7	U	8.3	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.9	U	3.3	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.1	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	3.3	U	2.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	1.4	U	1.2	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	29	U	25	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.1	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	2.6	U	2.3	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.4	U	2.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	7	U	6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	35	U	30	U	NC	

Prepared by: AKN 1/5/25
Checked by: JAR 1/10/25

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	35	U	30	U	NC	
C4V9681	E-A-PW01W_20241003	E-A-PW01W_20241003FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12		12		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	31		31		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	30		30		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	16		16		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	22		22		0	
				Perfluorononanoic acid (PFNA) (NG/L)	2.5		2.6		4	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.96	U	0.91	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.4	U	1.3	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.96	U	0.91	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.4	U	1.3	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.96	U	0.91	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5.6		5.7		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	7.9		7.6		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	120		120		0	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.6		1.7		6	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	89		91		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.3	U	1.2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.3	U	1.2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.96	U	0.91	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	3.6	U	3.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	3.7	U	3.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5.3	U	5.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.4	J	1.4	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1.4	U	1.3	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1.4	U	1.3	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1.4	U	1.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.96	U	0.91	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	9.6	U	9.1	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	9.6	U	9.1	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.8	U	3.6	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	3.3	U	3.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	1.4	U	1.3	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	28	U	27	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	2.6	U	2.5	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.4	U	2.3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	7	U	6.6	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	35	U	33	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	35	U	33	U	NC	
C4V9681	E-A-SD01W_00-0.5-20241003	E-A-SD01W_00-0.5-20241003FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00057	U	0.0006	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00016	U	0.00016	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0001	U	0.00011	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00023	U	0.00024	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0001	U	0.00011	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.000078	U	0.000081	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.000078	U	0.000081	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.000092	U	0.000096	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.000098	U	0.0001	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00015	J	0.00014	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00084		0.0011		27	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00014	U	0.00015	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00023	U	0.00024	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.00053	U	0.00056	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.00055	U	0.00057	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0009	U	0.00093	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.000035	J	0.00006	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00023	U	0.00024	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00014	U	0.00015	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00023	U	0.00024	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00023	U	0.00024	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.00078	U	0.00081	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.00052	U	0.00054	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00057	U	0.0006	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00039	U	0.00041	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00047	U	0.00049	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00021	U	0.00022	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0047	U	0.0049	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.00053	U	0.00056	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.00055	U	0.00057	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00026	U	0.00027	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.00039	U	0.00041	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0059	U	0.0061	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0059	U	0.0061	U	NC	
			WetChem	TOTAL SOLIDS (PERCENT)	78		75		4	
				MOISTURE, PERCENT (PERCENT)	22		25		13	
C4V9681	E-A-SW01W_20241003	E-A-SW01W_20241003FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12		12		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	33		33		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	33		33		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	16		16		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	25		26		4	
				Perfluorononanoic acid (PFNA) (NG/L)	2.1		2.1		0	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.91	U	0.92	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.3	U	1.4	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	0.91	U	0.92	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.3	U	1.4	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	0.91	U	0.92	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5.7		6.1		7	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8		8.1		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	130		120		8	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9		1.8		5	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	110		98		12	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.2	U	1.3	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.2	U	1.3	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	0.91	U	0.92	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	3.4	U	3.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	3.5	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	5	U	5.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.3	J	1.3	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	1.3	U	1.4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	1.3	U	1.4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	1.3	U	1.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	0.91	U	0.92	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	9.1	U	9.2	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	9.1	U	9.2	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	3.6	U	3.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.4	U	3.5	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	3.1	U	3.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	1.3	U	1.4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	27	U	27	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.4	U	3.5	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	2.5	U	2.5	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.3	U	2.3	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	6.6	U	6.7	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	33	U	34	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	33	U	34	U	NC	
FC18127	E-A-SO01N_00-02_20240814	E-A-SO01N_00-02_20240814FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00089	U	0.00091	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00031	J	0.00023	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0002	J	0.00014	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00026	J	0.00025	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00051	J	0.00039	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00028	J	0.00022	J	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00028	J	0.00024	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.004	J-	0.003	J-	29	MSL
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00045	U	0.00046	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0011	U	0.0011	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0011	U	0.0011	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0011	U	0.0011	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00045	U	0.00046	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00045	U	0.00046	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00045	U	0.00046	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00045	U	0.00046	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00045	U	0.00046	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0022	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0022	U	0.0023	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00089	U	0.00091	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00089	U	0.00091	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00045	U	0.00046	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.00089	U	0.00091	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0011	U	0.0011	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0011	U	0.0011	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00045	U	0.00046	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0011	U	0.0011	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0056	U	0.0057	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0056	U	0.0057	U	NC	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.0015	U	0.0018	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00041	J	0.00031	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00062	J	0.00041	J	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00032	J	0.00026	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00066	J	0.00073	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00029	J	0.00091	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0021		0.0017	J	21	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00058	J	0.00065	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.315		0.279		12	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0023		0.0025	J	8	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0014	J	0.0017	J	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0012	J	0.0012	J	NC	IAG
FC18905	E-A-SD01K_00-01_20240912	E-A-SD01K_00-01_20240912FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0019	U	0.0023	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0019	U	0.0023	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0033	J	0.0029	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0064		0.0075		16	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00076	U	0.00091	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00076	U	0.00091	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00076	U	0.00091	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00076	U	0.00091	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0038	U	0.0045	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0038	U	0.0045	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0015	U	0.0018	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0015	U	0.0018	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00076	U	0.00091	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00076	U	0.00091	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0015	U	0.0018	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0019	U	0.0023	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0019	U	0.0023	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00076	U	0.00091	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0019	U	0.0023	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0095	U	0.011	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0095	U	0.011	U	NC	
FC18905	E-A-SD01M_00-01_20240910	E-A-SD01M_00-01_20240910FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.001	U	0.001	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00051	U	0.00042	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00028	J	0.0004	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0118		0.012		2	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00051	U	0.00051	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00022	J	0.00026	J	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00051	U	0.00051	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0013	U	0.0013	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0013	U	0.0013	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0013	U	0.0013	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00041	J	0.00046	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00051	U	0.00051	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00051	U	0.00051	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00051	U	0.00051	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00051	U	0.00051	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0026	U	0.0026	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0026	U	0.0026	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.001	U	0.001	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.001	U	0.001	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00051	U	0.00051	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00051	U	0.00051	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.001	U	0.001	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0013	U	0.0013	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0013	U	0.0013	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00051	U	0.00051	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0013	U	0.0013	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0064	U	0.0064	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0064	U	0.0064	U	NC	
FC18905	E-A-SD01T_00-01_20240910	E-A-SD01T_00-01_20240910FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0014	U	0.0013	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.0007	U	0.00019	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.001	J	0.00093	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.0007	U	0.00066	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0017	U	0.0017	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0017	U	0.0017	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0017	U	0.0017	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.0007	U	0.00066	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.0007	U	0.00066	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.0007	U	0.00066	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.0007	U	0.00066	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.0007	U	0.00066	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0035	U	0.0033	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0035	U	0.0033	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0014	U	0.0013	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0014	U	0.0013	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.0007	U	0.00066	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0014	U	0.0013	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0017	U	0.0017	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0017	U	0.0017	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.0007	U	0.00066	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0017	U	0.0017	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0087	U	0.0083	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0087	U	0.0083	U	NC	
FC18905	E-A-SD01X_00-01_20240912	E-A-SD01X_00-01_20240912FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0017	U	0.0016	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00041	J	0.00038	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0064		0.0066		3	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00086	U	0.00079	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0021	U	0.002	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0021	U	0.002	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0021	U	0.002	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00086	U	0.00079	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00086	U	0.00079	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00086	U	0.00079	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00086	U	0.00079	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00086	U	0.00079	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0043	U	0.004	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0043	U	0.004	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0017	U	0.0016	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0017	U	0.0016	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00086	U	0.00079	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0017	U	0.0016	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0021	U	0.002	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0021	U	0.002	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00086	U	0.00079	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0021	U	0.002	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.011	U	0.0099	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.011	U	0.0099	U	NC	
FC18906	E-A-PW01J_20240912	E-A-PW01J_20240912FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.8	J	4.4	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.3	J	2.4	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.6	J	1.7	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1	J	1.1	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.6	J	1.4	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.79	J	0.77	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.57	J	0.59	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4	U	4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	6.2		6.1		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	6.8		6.6		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	80	U	80	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC18906	E-A-PW01X_20240913	E-A-PW01X_20240913FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.9	J	5.8	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	9.5		9.6		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	10.4		10.7		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6.7		7		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.9		9.2		3	
				Perfluorononanoic acid (PFNA) (NG/L)	0.94	J	1	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.6	J	3.8	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.9	J	5.2		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	73.3		70.2		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.5	J	1.7	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	50.3		50.3		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.9	U	9.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC18906	E-A-SW01K_20240912	E-A-SW01K_20240912FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	37.2		35		6	
				Perfluoropentanoic acid (PFPeA) (NG/L)	134		126		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	141		135		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	69.3	J-	65.7	J-	5	MSL
				Perfluorooctanoic acid (PFOA) (NG/L)	76.9	J-	73.4	J-	5	MSL
				Perfluorononanoic acid (PFNA) (NG/L)	8.5		8.1		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.6	J	1.5	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.1	J	0.74	J	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.3	U	2.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.3	U	2.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.3	U	2.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	35.2		34.7		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	47.2		46.1		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	426		405		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	36.3		36.3		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3000		2530		17	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	18.4	J	13.2	J	33	MSL, FDD
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	29.8	J	14.6	J	68	MSL, FDD
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.5	U	4.3	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	9.1	U	8.6	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	112		108		4	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	16.4	J	14.8	J	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	23.9	J-	19.8	J-	19	MSL
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.5	U	4.3	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.5	U	4.3	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.5	U	4.3	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.5	U	4.3	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	23	U	22	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	23	U	22	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.3	U	2.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.5	U	4.3	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.3	U	2.2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.5	U	4.3	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.5	U	4.3	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.5	U	4.3	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.5	U	4.3	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.3	U	2.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	11	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	23	U	22	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	23	U	22	U	NC	
FC18906	E-A-SW01M_20240910	E-A-SW01M_20240910FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	43.5		53.3		20	
				Perfluoropentanoic acid (PFPeA) (NG/L)	138		139		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	197		200		2	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	123		122		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	214		208		3	
				Perfluorononanoic acid (PFNA) (NG/L)	20.1		19.2		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	49.2		48		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	73.4		72.8		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	618		701		13	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	65.2		64		2	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3500		3450		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	14.1		14.4		2	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	3.9	J	3.1	J	23	IAG
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	217		217		0	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	77.8		79.1		2	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	24.6		24		2	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	4	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.8	U	9.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC18906	E-A-SW01T_20240910	E-A-SW01T_20240910FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.5	U	3.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.3	J	3.3	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.5	J	2.2	J	NC	IAG
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.4	J	1.3	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.7	J	2.3	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.83	J	0.95	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.9	J	0.89	J	NC	IAG
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.5	U	4.4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	19.6		21.2		8	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	10.7		10.7		0	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.2	U	2.2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.5	U	4.4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	90	U	8.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	9	U	8.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	9	U	8.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.2	U	2.2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.5	U	4.4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.5	U	4.4	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
August - October 2024 Ecological Abiotic Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.5	U	4.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.5	U	4.4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	22	U	22	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	22	U	22	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.2	U	2.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.5	U	4.4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.2	U	2.2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.5	U	4.4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.5	U	4.4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.5	U	4.4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.5	U	4.4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.2	U	2.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	11	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	22	U	22	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	22	U	22	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	7.5	J	8.5	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	18.5		20.3		9	
				Perfluorohexanoic acid (PFHxA) (NG/L)	18		18.8		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	10.2		10.3		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	14.9		15.1		1	
				Perfluorononanoic acid (PFNA) (NG/L)	1.6	J	1.5	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.8	J	4	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	5.2	J	5.5		6	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	73.9		75.5		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.7	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	63.9		64.4		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.2	U	4.2	U	NC	
FC18906	E-A-SW01X_20240912	E-A-SW01X_20240912FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8.4	U	8.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8.4	U	8.4	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8.4	U	8.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.1	U	2.1	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.2	U	4.2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.2	U	4.2	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.2	U	4.2	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.2	U	4.2	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	21	U	21	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	21	U	21	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.1	U	2.1	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.2	U	4.2	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.2	U	4.2	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.2	U	4.2	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.2	U	4.2	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.2	U	4.2	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.1	U	2.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	11	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	21	U	21	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	21	U	21	U	NC	
FC19237	E-T-SO01P_00-02_20240920	E-T-SO01P_00-02_20240920FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00092	U	0.00092	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00014	J	0.00046	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00021	J	0.0002	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00014	J	0.00046	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00018	J	0.00046	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00039	J	0.00029	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00046	U	0.00046	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0012	U	0.0011	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0012	U	0.0011	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0012	U	0.0011	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00046	U	0.00046	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00046	U	0.00046	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00046	U	0.00046	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00046	U	0.00046	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00046	U	0.00046	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0023	U	0.0023	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0023	U	0.0023	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00092	U	0.00092	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00092	U	0.00092	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00046	U	0.00046	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.00092	U	0.00092	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0012	U	0.0011	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0012	U	0.0011	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00046	U	0.00046	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0012	U	0.0011	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0058	U	0.0057	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0058	U	0.0057	U	NC	
FC19237	E-T-SO02P_00-02_20240920	E-T-SO02P_00-02_20240920FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.00093	U	0.00095	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00047	U	0.00048	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00047	U	0.00048	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00047	U	0.00048	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00047	U	0.00048	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00047	U	0.00048	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00047	U	0.00048	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0023	U	0.0024	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0023	U	0.0024	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00093	U	0.00095	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00093	U	0.00095	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00047	U	0.00048	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.00093	U	0.00095	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0012	U	0.0012	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0012	U	0.0012	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00047	U	0.00048	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0012	U	0.0012	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0058	U	0.0059	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0058	U	0.0059	U	NC	
FC19346	E-A-SW02V_20241002	E-A-SW02V_20241002FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	11.4	J	12.1	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	30.2		31.6		5	
				Perfluorohexanoic acid (PFHxA) (NG/L)	29.6		30.6		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	13.8		14.4		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	25.2		26.1		4	
				Perfluorononanoic acid (PFNA) (NG/L)	2	J	1.9	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	5.8		6		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	8.1		9.1		12	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	92.1		96.4		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.8		3.7		3	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	121		124		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	21.2		23.4		10	

Table 4 - Summary of Field Duplicate Results
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.2	J	2.2	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.00097	U	0.001	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00019	J	0.00023	J	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00049	U	0.00015	J	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00026	J	0.00032	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00029	J	0.00029	J	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00022	J	0.0005	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.0038		0.0038		0	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00049	U	0.0005	U	NC	
EC19346	E-T-SO01Q_00-02_20241002	E-T-SO01Q_00-02_20241002FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	

Table 4 - Summary of Field Duplicate Results
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
[illegible]	[illegible]	[illegible]	[illegible]	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0024	U	0.0025	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0024	U	0.0025	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00097	U	0.001	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00097	U	0.001	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.00097	U	0.001	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0012	U	0.0012	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0012	U	0.0012	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00049	U	0.0005	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0012	U	0.0012	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0061	U	0.0062	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0061	U	0.0062	U	NC	
				Perfluorobutanoic acid (PFBA) (MG/KG)	0.00098	U	0.00099	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00015	J	0.00016	J	NC	IAG
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00012	J	0.0005	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00017	J	0.00012	J	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00023	J	0.00018	J	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00042	J	0.00039	J	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00013	J	0.00013	J	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00016	J	0.00016	J	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00051	J	0.00035	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.001	J	0.00078	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00049	U	0.0005	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19346	E-T-SO02Q_00-02_20241002	E-T-SO02Q_00-02_20241002FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0012	U	0.0012	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00049	U	0.0005	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0025	U	0.0025	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0025	U	0.0025	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.00098	U	0.00099	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.00098	U	0.00099	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00049	U	0.0005	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.00098	U	0.00099	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0012	U	0.0012	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0012	U	0.0012	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00049	U	0.0005	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0012	U	0.0012	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0061	U	0.0062	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0061	U	0.0062	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	2.2	J	2.4	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.5	J	1.8	J	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	0.99	J	1	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	0.78	J	0.94	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1.1	J	1.1	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	0.74	J	0.65	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4	U	4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.1	J	2	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	6		5.8		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	

Table 4 - Summary of Field Duplicate Results
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC19899	E-A-PW02L_20241021	E-A-PW02L_20241021FD	PFAS	Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.9	U	8.1	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.9	U	8.1	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.9	U	8.1	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.9	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	

Notes:
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias
J- = Concentration is estimated; potential low bias
R = Data are unusable
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NC = not calculated < LOQ
MG/KG = milligram per kilogram
NG/L = nanogram per liter
RPD = relative percent difference
SDG = Sample Delivery Group
FDD = Field duplicate relative percent difference (RPD) criteria exceeded
IAG = Transition ion ratio outside limits
MSL = Matrix spike recovery low

Table 5 - Acronyms and Abbreviations

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Acronym or Abbreviation	Definition
%	Percent
BV	Bureau Veritas Environmental Laboratory
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

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1.0 INTRODUCTION

Soil and groundwater samples were collected at the Former Loring Air Force Base in Limestone, Maine, in August and September 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America (SGS) located in Orlando, Florida, for analysis.

SGS analyzed 25 samples and 3 equipment blanks for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Field Duplicate RPD Summary
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Ten percent of the PFAS data collected during the remedial investigation were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2B data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs.

Stage 4 data validation includes all reviews performed in Stage 2B as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

EBL = Equipment blank contamination less than reporting limit
IAG = Ion abundance ratio outside calculated limits
MSL = Matrix spike recovery less than lower control limit
SNL = Signal-to-noise ratio less than 10:1 for ions used for quantitation

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* Instrument Performance/Tuning
* LCS
  MS/MSD
* Field Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 QC Blanks

Perfluorooctanoic acid (PFOA) was detected in equipment blank LORNG_EB033_09102024 (1.5 J ng/l) associated with a subset of samples. The detections of PFOA in samples F-GWA12_20240910, F-GWA13_20240910, and F-GWB12_20240910 were reported at concentrations less than the LOQ but greater than the LOD and the results were qualified as not-detected (U) at the reported concentrations with reason code EBL.

Perfluorooctane sulfonamide (PFOSA) was detected in equipment blank LORNG_EB033_09102024 (1.6 J ng/l) associated with a subset of samples. The detection of PFOSA in sample F-GWC12_20240910 was reported at a concentration less than the LOD and the result was qualified as not-detected (U) at the LOD. The detection of PFOSA in sample F-GWC13_20240910 was reported at a concentration less than the LOQ but greater than the LOD and the result was qualified as not-detected (U) at the reported result with reason code EBL.

2.1.2 MS/MSD

Sample F-HSA15_00-01_20240911 was used as the soil MS/MSD. All results were within Method 1633 recovery and relative percent difference (RPD) limits.

Sample F-GWA15_20240911 was used as the groundwater MS/MSD. All results were within Method 1633 recovery and RPD limits with the following exceptions:

Reporting limits for the following compounds in sample F-GWA15_20240911 and associated field duplicate F-GWA15_20240911FD were qualified as estimated (UJ) with reason code MSL based on low recoveries in the associated MS/MSD:

Perfluorotridecanoic acid (PFTrDA) [53/63]
Perfluorodecanesulfonic acid (PFDS) [57]
Perfluorododecanesulfonic acid (PFDoS) [22/25]
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) [59/62]
11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) [45/49]

Percent MS/MSD recoveries for these compounds ranged from 22 to 63 as indicated in brackets above. Control limits from Method 1633 were reported by the laboratory and used for evaluation and qualification of associated sample results.

2.1.3 Compound Identification and Quantitation

The transition ion ratios were outside of the acceptance criteria for one or more compounds for the following samples and the results were qualified as estimated (J) with reason code IAG:

F-HSA10_00-01_20240818	F-GWA12_20240910
F-HSA14_00-01_20240911	F-GWA15_20240911
F-HSC12_00-01_20240910	F-GWA15_20240911FD
F-HSC13_00-01_20240910	F-GWCS01_20240911

The low concentration detection of PFPeA in sample F-HSA10_00-01_20240818 was qualified not detected (U) at the LOD with reason code SNL based on a signal-to-noise ratio (8.79) that was less than ten.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2024. "Draft Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Draft Rev 1, Former Loring Air Force Base, Limestone, Maine; April 2024.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories"; Version 5.4; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

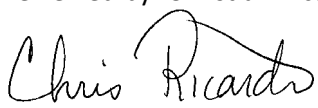
USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Julie Ricardi



December 31, 2024

Reviewed by: Christian Ricardi, NRCC-EAC



January 6, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC18167	A10	F-HSA10_00-01_20240818	FC18167-1	8/18/2024	SO	N	40
	B10	F-HSB10_00-01_20240817	FC18167-2	8/17/2024	SO	N	40
	C10	F-HSC10_00-01_20240817	FC18167-3	8/17/2024	SO	N	40
	C11	F-HSC11_00-01_20240818	FC18167-4	8/18/2024	SO	N	40
	FIELDQC	LORNG_EB032_08182024	FC18167-5	8/18/2024	WQ	EB	40
FC18790	A12	F-HSA12_00-01_20240910	FC18790-1	9/10/2024	SO	N	40
	A13	F-HSA13_00-01_20240910	FC18790-2	9/10/2024	SO	N	40
	A14	F-HSA14_00-01_20240911	FC18790-3	9/11/2024	SO	N	40
	A15	F-HSA15_00-01_20240911	FC18790-4	9/11/2024	SO	N	40
		F-HSA15_00-01_20240911FD	FC18790-5	9/11/2024	SO	FD	40
	B12	F-HSB12_00-01_20240910	FC18790-6	9/10/2024	SO	N	40
	B13	F-HSB13_00-01_20240910	FC18790-7	9/10/2024	SO	N	40
	C12	F-HSC12_00-01_20240910	FC18790-8	9/10/2024	SO	N	40
	C13	F-HSC13_00-01_20240910	FC18790-9	9/10/2024	SO	N	40
	C14	F-HSC14_00-01_20240910	FC18790-10	9/10/2024	SO	N	40
	C15	F-HSC15_00-01_20240911	FC18790-11	9/11/2024	SO	N	40
	CS01	F-HSCS01_00-01_20240911	FC18790-12	9/11/2024	SO	N	40
FC18818	A12	F-GWA12_20240910	FC18818-1	9/10/2024	WG	N	40
	A13	F-GWA13_20240910	FC18818-2	9/10/2024	WG	N	40
	A15	F-GWA15_20240911	FC18818-3	9/11/2024	WG	N	40
		F-GWA15_20240911FD	FC18818-4	9/11/2024	WG	FD	40
	B12	F-GWB12_20240910	FC18818-5	9/10/2024	WG	N	40
	B13	F-GWB13_20240910	FC18818-6	9/10/2024	WG	N	40
	C12	F-GWC12_20240910	FC18818-7	9/10/2024	WG	N	40
	C13	F-GWC13_20240910	FC18818-8	9/10/2024	WG	N	40
	CS01	F-GWCS01_20240911	FC18818-9	9/11/2024	WG	N	39
	FIELDQC	LORNG_EB033_09102024	FC18818-10	9/10/2024	WQ	EB	40
		LORNG_EB034_09112024	FC18818-11	9/11/2024	WQ	EB	40

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

SO = Soil; WG = Groundwater; WQ = Water Quality Control

Shaded samples subjected to Stage 4 validation

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC18167								FC18790													
		Location		A10		B10		C10		C11		A12		A13		A14		A15				B12		B13	
		Sample Date		8/18/2024		8/17/2024		8/17/2024		8/18/2024		9/10/2024		9/10/2024		9/11/2024		9/11/2024				9/10/2024		9/10/2024	
		Sample ID		F-HSA10_00-01_20240818		F-HSB10_00-01_20240817		F-HSC10_00-01_20240817		F-HSC11_00-01_20240818		F-HSA12_00-01_20240910		F-HSA13_00-01_20240910		F-HSA14_00-01_20240911		F-HSA15_00-01_20240911		F-HSA15_00-01_20240911FD		F-HSB12_00-01_20240910		F-HSB13_00-01_20240910	
		QC Code		N		N		N		N		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0078	U	0.0013	U	0.0012	U	0.0019	U	0.019	U	0.029	U	0.008	U	0.0014	U	0.0014	U	0.0019	U	0.0011	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.0013	J	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00041	J	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0011	J	0.00065	U	0.00023	J	0.0013	J	0.0093	U	0.014	U	0.0025	J	0.00071	U	0.00072	U	0.00094	U	0.0002	J
		Perfluorononanoic acid (PFNA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.0012	J	0.00071	U	0.00072	U	0.00094	U	0.00043	J
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00018	J
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.0004	J	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.0003	J
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.0014	J	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0011	J	0.00071	J	0.00028	J	0.0021	J	0.0093	U	0.014	U	0.0022	J	0.001	J	0.00087	J	0.0009	J	0.00054	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.049	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.049	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0097	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.019	U	0.0032	U	0.003	U	0.0048	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0039	U	0.0032	U	0.003	U	0.0048	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.019	U	0.0032	U	0.003	U	0.0048	U	0.047	U	0.072	U	0.02	U	0.0035	U	0.0036	U	0.0047	U	0.0028	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.019	U	0.0032	U	0.003	U	0.0048	U	0.047	U	0.072	U	0.02	U	0.0035	U	0.0036	U	0.0047	U	0.0028	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0078	U	0.0013	U	0.0012	U	0.0019	U	0.019	U	0.029	U	0.008	U	0.0014	U	0.0014	U	0.0019	U	0.0011	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0078	U	0.0013	U	0.0012	U	0.0019	U	0.019	U	0.029	U	0.008	U	0.0014	U	0.0014	U	0.0019	U	0.0011	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0078	U	0.0013	U	0.0012	U	0.0019	U	0.019	U	0.029	U	0.008	U	0.0014	U	0.0014	U	0.0019	U	0.0011	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0097	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0097	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0039	U	0.00065	U	0.0006	U	0.00095	U	0.0093	U	0.014	U	0.004	U	0.00071	U	0.00072	U	0.00094	U	0.00056	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0097	U	0.0016	U	0.0015	U	0.0024	U	0.023	U	0.036	U	0.01	U	0.0018	U	0.0018	U	0.0024	U	0.0014	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.049	U	0.0081	U	0.0075	U	0.012	U	0.12	U	0.18	U	0.05	U	0.0089	U	0.009	U	0.012	U	0.0071	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.049	U	0.0081	U	0.0075	U	0.012	U	0.12	U	0.18	U	0.05	U	0.0089	U	0.009	U	0.012	U	0.0071	U

Notes:
N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank
J = Concentration is estimated

Prepared by: AKN
Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC18167														FC18790													
		Location		A10		B10		C10		C11		A12		A13		A14		A15				B12		B13							
		Sample Date		8/18/2024		8/17/2024		8/17/2024		8/18/2024		9/10/2024		9/10/2024		9/11/2024		9/11/2024				9/10/2024		9/10/2024							
		Sample ID		F-HSA10_00-01_20240818		F-HSB10_00-01_20240817		F-HSC10_00-01_20240817		F-HSC11_00-01_20240818		F-HSA12_00-01_20240910		F-HSA13_00-01_20240910		F-HSA14_00-01_20240911		F-HSA15_00-01_20240911		F-HSA15_00-01_20240911FD		F-HSB12_00-01_20240910		F-HSB13_00-01_20240910							
		QC Code		N		N		N		N		N		N		N		N		FD		N		N							
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier						

J+ = Concentration is estimated; potential high bias
J- = Concentration is estimated; potential low bias
R = Data are unusable
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
MG/KG = Milligram per kilogram
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18790										
			Location	C12		C13		C14		C15		CS01		
			Sample Date	9/10/2024		9/10/2024		9/10/2024		9/11/2024		9/11/2024		
			Sample ID	F-HSC12_00-01_20240910		F-HSC13_00-01_20240910		F-HSC14_00-01_20240910		F-HSC15_00-01_20240911		F-HSCS01_00-01_20240911		
			QC Code	N		N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0017	U	0.0019	U	0.0012	U	0.001	U	0.0034	U	
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00087	U	0.00045	J	0.00058	U	0.00051	U	0.0017	U	
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00026	J	0.00076	J	0.00058	U	0.00051	U	0.0017	U	
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00015	J	0.0017	U	
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0004	J	0.00049	J	0.00023	J	0.00014	J	0.0017	U	
		Perfluorononanoic acid (PFNA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00087	U	0.00095	U	0.00016	J	0.00051	U	0.0017	U	
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00087	U	0.00095	U	0.00029	J	0.00051	U	0.0017	U	
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00087	U	0.00032	J	0.00058	U	0.00051	U	0.0017	U	
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00071	J	0.005		0.00058	U	0.00051	U	0.0017	U	
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.005		0.0452		0.0081		0.00014	J	0.00066	J	
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00087	U	0.00055	J	0.00058	U	0.00051	U	0.0017	U	
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00043	J	0.00057	J	0.00058	U	0.00051	U	0.0017	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0043	U	0.0047	U	0.0029	U	0.0026	U	0.0086	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0043	U	0.0047	U	0.0029	U	0.0026	U	0.0086	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0017	U	0.0019	U	0.0012	U	0.001	U	0.0034	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0017	U	0.0019	U	0.0012	U	0.001	U	0.0034	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0017	U	0.0019	U	0.0012	U	0.001	U	0.0034	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00087	U	0.00095	U	0.00058	U	0.00051	U	0.0017	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0022	U	0.0024	U	0.0015	U	0.0013	U	0.0043	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.011	U	0.012	U	0.0073	U	0.0064	U	0.022	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.011	U	0.012	U	0.0073	U	0.0064	U	0.022	U	

Notes:
N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank
J = Concentration is estimated

Prepared by: AKN
Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

		SDG		FC18790											
		Location		C12		C13		C14		C15		CS01			
		Sample Date		9/10/2024		9/10/2024		9/10/2024		9/11/2024		9/11/2024			
		Sample ID		F-HSC12_00-01_20240910		F-HSC13_00-01_20240910		F-HSC14_00-01_20240910		F-HSC15_00-01_20240911		F-HSCS01_00-01_20240911			
		QC Code		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		

J+ = Concentration is estimated; potential high bias
J- = Concentration is estimated; potential low bias
R = Data are unusable
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
MG/KG = Milligram per kilogram
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

				SDG	FC18167	FC18818																			
				Location	FIELDQC	A12		A13		A15				B12		B13		C12		C					
				Sample Date	8/18/2024	9/10/2024		9/10/2024		9/11/2024				9/10/2024		9/10/2024		9/10/2024		9/10					
				Sample ID	LORNG_EB032_08182024	F-GWA12_20240910		F-GWA13_20240910		F-GWA15_20240911		F-GWA15_20240911FD		F-GWB12_20240910		F-GWB13_20240910		F-GWC12_20240910		F-GWC13					
				QC Code	EB	N		N		N		FD		N		N		N							
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result					
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	7.4	J	6.2	J	6	J	3.7	J	4.2	J	4.1	U	7.8	J	9.4					
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	10.6		12.2		35.3		20	U	4.9	J	20	U	18.8		14.5					
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	3.7	J	1.2	J	4.4	J	3.9	J	1.4	J	2	U	31		54.7					
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	4.4		1.1	J	2.8	J	2.4	J	1.3	J	2	U	12.6		12.7					
		Perfluorooctanoic acid (PFOA)	NG/L	0.91	U	3.1	U	1.9	U	2.5	J	2.1	J	2.2	U	1	U	30.4		27.7					
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.2	J	1.2	J	1.5	J	1.5	J	0.8	J	2	U	2	J	3.8					
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	1					
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	2	U	2	U	2	UJ	2	UJ	1.9	U	2	U	1.8	U	2					
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	0.54	J	2	U	2	U	2	U	1.9	U	2	U	4.6		11.7					
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	5.9		13.3					
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	12.7		0.85	J	2.4	J	2.3	J	3.2	J	2	U	149		475					
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	3.7		4.9					
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	4		1.3	J	10.9		10.4		2.3	J	2	U	182		366					
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	2	U	2	U	2	UJ	2	UJ	1.9	U	2	U	1.8	U	2					
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	4	U	4.1	U	4	UJ	4	UJ	3.8	U	4.1	U	3.6	U	4					
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	8	U	8.2	U	80	U	80	U	7.7	U	8.2	U	7.3	U	7.9					
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	8	U	8.2	U	5.1	J	4.3	J	7.7	U	8.2	U	4.2	J	49.1					
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	8	U	8.2	U	8	U	8	U	7.7	U	8.2	U	7.3	U	7.9					
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	3.6	U	4					
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	3.6	U	4					
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	3.6	U	4					
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	3.6	U	4					
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	20	U	20	U	20	U	20	U	19	U	20	U	18	U	20					
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	20	U	20	U	20	U	20	U	19	U	20	U	18	U	20					
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	2	U	2	U	20	U	20	U	1.9	U	20	U	1.8	U	20					
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	4	U	4.1	U	40	U	40	U	3.8	U	41	U	3.6	U	40					
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2					

Prepared by: AKN
Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC18167		FC18818														
			Location	FIELDQC		A12		A13		A15				B12		B13		C12		C
			Sample Date	8/18/2024		9/10/2024		9/10/2024		9/11/2024				9/10/2024		9/10/2024		9/10/2024		9/10
			Sample ID	LORNG_EB032_08182024		F-GWA12_20240910		F-GWA13_20240910		F-GWA15_20240911		F-GWA15_20240911FD		F-GWB12_20240910		F-GWB13_20240910		F-GWC12_20240910		F-GWC13
			QC Code	EB		N		N		N		FD		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	4	U	4.1	U	4	U	40	U	3.8	U	41	U	3.6	U	40
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	4	U	4.1	U	4	U	4	U	3.8	U	4.1	U	3.6	U	4
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	4	U	4.1	U	40	UJ	40	UJ	3.8	U	41	U	3.6	U	40
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	4	U	4.1	U	40	UJ	40	UJ	3.8	U	41	U	3.6	U	40
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	2	U	2	U	2	U	2	U	1.9	U	2	U	1.8	U	2
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	10	U	10	U	10	U	100	U	9.6	U	100	U	9.1	U	99
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	20	U	20	U	20	U	20	U	19	U	20	U	18	U	20
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	20	U	20	U	20	U	20	U	19	U	20	U	18	U	20

Notes:

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG							FC18818
			Location	13		CS01		FIELDQC		FIELDQC
			Sample Date	/2024		9/11/2024		9/10/2024		9/11/2024
			Sample ID	_20240910		F-GWCS01_20240911		LORNG_EB033_09102024		LORNG_EB034_09112024
			QC Code	N		N		EB		EB
Class	Fraction	Analyte Name	Units	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	J	4	U	4.5	U	4.3	U
		Perfluoropentanoic acid (PFPeA)	NG/L	J	2	U	2.3	U	2.2	U
		Perfluorohexanoic acid (PFHxA)	NG/L		2	U	2.3	U	2.2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L		0.88	J	2.3	U	2.2	U
		Perfluorooctanoic acid (PFOA)	NG/L		0.72	J	1.5	J	1.1	U
		Perfluorononanoic acid (PFNA)	NG/L	J	2	U	2.3	U	2.2	U
		Perfluorodecanoic acid (PFDA)	NG/L	J	2	U	2.3	U	2.2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L		2	U	2.3	U	2.2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L		4	U	4.5	U	4.3	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L		2	U	2.3	U	2.2	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L		2	U	2.3	U	2.2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L		0.96	J	2.3	U	2.2	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	U	2	U	2.3	U	2.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	U	4	U	4.5	U	4.3	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	U	8	U	9.1	U	8.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L		8	U	9.1	U	8.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	U	8	U	9.1	U	8.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	U	2	U	1.6	J	2.2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	U	4	U	4.5	U	4.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	U	4	U	1.6	J	4.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	U	4	U	4.5	U	4.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	U	4	U	4.5	U	4.3	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	U	20	U	23	U	22	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	U	20	U	23	U	22	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	U	2	U	2.3	U	2.2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	U	4	U	4.5	U	4.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	U	2	U	2.3	U	2.2	U

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG											FC18818
Location				:13		CS01		FIELDQC			FIELDQC
Sample Date				/2024		9/11/2024		9/10/2024			9/11/2024
Sample ID				3_20240910		F-GWCS01_20240911		LORNG_EB033_0910 2024			LORNG_EB034_09112 024
QC Code				N		N		EB			EB
Class	**Fraction**	**Analyte Name**	**Units**	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	U	4	U	4.5	U	4.3	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	U	4	U	4.5	U	4.3	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	U	4	U	4.5	U	4.3	U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	U	4	U	4.5	U	4.3	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	U	2	U	2.3	U	2.2	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	U			11	U	11	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	U	20	U	23	U	22	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	U	20	U	23	U	22	U	

Notes:

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 12/15/24
Checked by: JAR
Date: 1/2/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC18167	E1633DR	T	FC18167-1	F-HSA10_00-01_20240818	Perfluoropentanoic acid (PFPeA)	0.0019	J	0.0039	U	SNL	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.0011	J	IAG	MG/KG
FC18790	E1633DR	T	FC18790-3	F-HSA14_00-01_20240911	Perfluorooctanoic acid (PFOA)	0.0025	J	0.0025	J	IAG	MG/KG
			FC18790-8	F-HSC12_00-01_20240910	Perfluorooctane sulfonamide (PFOSA)	0.00043	J	0.00043	J	IAG	MG/KG
			FC18790-9	F-HSC13_00-01_20240910	Perfluorooctane sulfonamide (PFOSA)	0.00057	J	0.00057	J	IAG	MG/KG
FC18818	E1633DR	T	FC18818-1	F-GWA12_20240910	Perfluorooctanoic acid (PFOA)	3.1	J	3.1	U	EBL	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.54	J	0.54	J	IAG	NG/L
			FC18818-2	F-GWA13_20240910	Perfluorooctanoic acid (PFOA)	1.9	J	1.9	U	EBL	NG/L
			FC18818-3	F-GWA15_20240911	Perfluorohexanoic acid (PFHxA)	4.4	=	4.4	J	IAG	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	MSL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	MSL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	4	U	4	UJ	MSL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	40	U	40	UJ	MSL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	40	U	40	UJ	MSL	NG/L
			FC18818-4	F-GWA15_20240911FD	Perfluorohexanoic acid (PFHxA)	3.9	J	3.9	J	IAG	NG/L
					Perfluorotridecanoic acid (PFTrDA)	2	U	2	UJ	MSL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	MSL	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	4	U	4	UJ	MSL	NG/L
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	40	U	40	UJ	MSL	NG/L
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	40	U	40	UJ	MSL	NG/L
			FC18818-5	F-GWB12_20240910	Perfluorooctanoic acid (PFOA)	2.2	J	2.2	U	EBL	NG/L
			FC18818-7	F-GWC12_20240910	Perfluorooctane sulfonamide (PFOSA)	1.7	J	1.8	U	EBL	NG/L
			FC18818-8	F-GWC13_20240910	Perfluorooctane sulfonamide (PFOSA)	2	J	2	U	EBL	NG/L
			FC18818-9	F-GWCS01_20240911	Perfluoroheptanoic acid (PFHpA)	0.88	J	0.88	J	IAG	NG/L

Prepared by:AKN
Date:12/17524
Checked by: JAR
Date: 1/2/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

EBL = Detected in equipment blank

IAG = Transition ion ratio outside limits

MSL = Matrix spike recovery low

SNL = Signal to noise ratio low

MG/KG = Milligram per kilogram

NG/L = Nanogram per liter

Prepared by:AKN
Date:12/17524
Checked by: JAR
Date: 1/2/25

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC18790	F-HSA15_00-01_20240911	F-HSA15_00-01_20240911FD	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0014	U	0.0014	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.001	J	0.00087	J	NC	
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00071	U	0.00072	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0018	U	0.0018	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0018	U	0.0018	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0018	U	0.0018	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00071	U	0.00072	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00071	U	0.00072	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00071	U	0.00072	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00071	U	0.00072	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00071	U	0.00072	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0035	U	0.0036	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0035	U	0.0036	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0014	U	0.0014	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0014	U	0.0014	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00071	U	0.00072	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0014	U	0.0014	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0018	U	0.0018	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0018	U	0.0018	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00071	U	0.00072	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0018	U	0.0018	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.0089	U	0.009	U	NC	

Prepared by: AKN 12/15/24
Checked by: JAR 1/2/25

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.0089	U	0.009	U	NC	
FC18818	F-GWA15_20240911	F-GWA15_20240911FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6	J	3.7	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	35.3		20	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.4	J	3.9	J	12	IAG
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.8	J	2.4	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	2.5	J	2.1	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.5	J	1.5	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	UJ	2	UJ	NC	MSL
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4	U	4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.4	J	2.3	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	10.9		10.4		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	UJ	2	UJ	NC	MSL
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	UJ	4	UJ	NC	MSL
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	80	U	80	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	5.1	J	4.3	J	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	20	U	20	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	40	U	40	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	40	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	40	UJ	40	UJ	NC	MSL
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	40	UJ	40	UJ	NC	MSL
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	100	U	NC	

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	

Notes:

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NC = not calculated < LOQ

MG/KG = milligram per kilogram

NG/L = nanogram per liter

RPD = relative percent difference

SDG = Sample Delivery Group

IAG = Transition ion ratio outside limits

MSL = Matrix spike recovery low

Prepared by: AKN 12/15/24
Checked by: JAR 1/2/25

Table 5 - Acronyms and Abbreviations

Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate & Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Aqueous samples were collected at the Former Loring Air Force Base in Limestone, Maine, in November 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America (SGS) located in Orlando, Florida, for analysis.

SGS analyzed eight LEAF samples for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 2B procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 2B data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP

were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
J- = Analyte present; concentration is estimated with potential low bias
U = Analyte not detected at the associated detection limits
UJ = Analyte was not detected at the associated detection limits; however, the associated detection limit should be considered an estimate.
R = Sample result is considered unusable for project objectives

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

IAG = Ion abundance ratio outside calculated limits

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
* LCS
* MS/MSD (not applicable)
* Field Duplicates (not applicable)
* Extracted Internal Standard Recovery

* Reporting Limits
* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
  Compound Identification and Quantitation
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Compound Identification and Quantitation

The result for perfluoroheptanoic acid (PFHpA) in sample LORNG_SB05041_0-2_100124 T8 was qualified estimated (J) with reason code IAG based on an ion abundance ratio that was outside the calculated limits.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2024. "Draft Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Draft Rev 1, Former Loring Air Force Base, Limestone, Maine; April 2024.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories"; Version 5.4; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Julie Ricardi

Julie Ricardi

February 2, 2025

Reviewed by: Christian Ricardi, NRCC-EAC

Chris Ricardi

February 11, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC20337	SB01055	LORNG_SB01055_0-2_100124 T8	FC20337-1	11/8/2024	LA	N	40
		LORNG_SB01055_0-2_100124 T9	FC20337-2	11/9/2024	LA	N	40
		LORNG_SB01055_13-15_100124 T8	FC20337-3	11/8/2024	LA	N	40
		LORNG_SB01055_13-15_100124 T9	FC20337-4	11/9/2024	LA	N	40
	SB05041	LORNG_SB05041_0-2_100124 T8	FC20337-5	11/8/2024	LA	N	40
		LORNG_SB05041_0-2_100124 T9	FC20337-6	11/9/2024	LA	N	40
		LORNG_SB05041_10-12_100124 T8	FC20337-7	11/8/2024	LA	N	40
		LORNG_SB05041_10-12_100124 T9	FC20337-8	11/9/2024	LA	N	40

Notes:

N = Normal Field Sample

LA = Leachate Sample

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/3/25
Checked by: JR
Date: 2/3/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20337												
			Location	SB01055							SB05041					
			Sample Date	11/8/2024		11/9/2024					11/8/2024		11/9/2024			
			Sample ID	LORNG_SB01055_0-2_100124 T8		LORNG_SB01055_13-15_100124 T8		LORNG_SB01055_0-2_100124 T9		LORNG_SB01055_13-15_100124 T9		LORNG_SB05041_0-2_100124 T8		LORNG_SB05041_10-12_100124 T8		LORNG_SB05041_0-2_100124 T9		LORNG_SB05041_10-12_100124 T9	
			QC Code	N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	2	U	2	U	2	U	0.55	J	2	U	2	U	2	U
		Perfluorooctanoic acid (PFOA)	NG/L	1	J	6.3		0.7	J	3.8	J	1.4	J	4.6		0.83	J	2.3	J
		Perfluorononanoic acid (PFNA)	NG/L	1.3	J	2	U	0.66	J	2	U	0.61	J	2	U	2	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	0.63	J	2	U	0.54	J	2	U	1	J	2	U	0.8	J	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1	J	2	U	2	U	2	U	0.83	J	0.95	J	2	U	0.72	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	12		0.93	J	7.1		2	U	15.3		4.9		13.1		2.4	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8	U	8	U	8.2	U	8	U	7.9	U	8	U	8.2	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8	U	8	U	8.2	U	8	U	7.9	U	8	U	8.2	U	8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8	U	8	U	8.2	U	8	U	7.9	U	8	U	8.2	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		11-Chlorоeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	4	U	4.1	U	4	U	4	U	4	U	4.1	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U	10	U	10	U	9.9	U	10	U	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U

Notes:

N = Normal Field Sample

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

Prepared by: AKN
Date: 2/4/25
Checked by: JAR
Date: 2/4/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20337													
			Location	SB01055							SB05041						
			Sample Date	11/8/2024		11/9/2024					11/8/2024				11/9/2024		
			Sample ID	LORNG_SB01055_0-2_100124 T8		LORNG_SB01055_13-15_100124 T8		LORNG_SB01055_0-2_100124 T9		LORNG_SB01055_13-15_100124 T9		LORNG_SB05041_0-2_100124 T8		LORNG_SB05041_10-12_100124 T8		LORNG_SB05041_0-2_100124 T9		LORNG_SB05041_10-12_100124 T9	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier

UJ = Analyte not detected and the associated detection limits are estimated

Prepared by: AKN
Date: 2/4/25
Checked by: JAR
Date: 2/4/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC20337	E1633DR	T	FC20337-5	LORNG_SB05041_0-2_100124 T8	Perfluoroheptanoic acid (PFHpA)	0.55	J	0.55	J	IAG	NG/L

Notes:

J = Concentration estimated

NG/L = Nanogram per liter

Reason Codes:

IAG = Ion abundance ratio outside calculated limits

Table 4 - Acronyms and Abbreviations

Data Validation Report
Loring PFAS Remedial Investigation
2024 Fate Transport LEAF Sampling Program
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

DATA VALIDATION REPORT

LORING PFAS RI
2024 HUMAN HEALTH FORAGING SAMPLING PROGRAM
SPRING 2024 - SDG 24-0609
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JANUARY 21, 2025

DATA VALIDATION REPORT

LORING PFAS RI
2024 HUMAN HEALTH FORAGING SAMPLING PROGRAM
SPRING 2024 - SDG 24-0609
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

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January 21, 2025

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Reviewed/Approved By: Chris Ricardi Date: 1/21/2025

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomersulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
ng/L	nanograms per liter
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFDoS	perfluorododecanesulfonic acid
PFOA	perfluorooctanoic acid
PFOSA	perfluorooctanesulfonamide
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 4 forge (plant tissue) samples on 8 and 10 May 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to Battelle Norwell Operations (Battelle), located in Norwell, Massachusetts, where they were received on 13 May 2024. Battelle assigned the samples to job numbers 24-0609 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 4 validation on a minimum of 10 percent (%) of the field samples reviewed in this report and Stage 2B validation on the remaining field sample data. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms and review of the raw analytical data and Stage 2B is the same as Stage 4 except it does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and

– Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISL	Low EIS recovery.
HAHL	Holding time: extraction to analysis holding time exceeded
ISL	Low NIS recovery
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Bettelle may be considered usable with the limitations described in Sections 7.1.1 through 7.1.16.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection. Except as noted below, the sample extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

- The samples collected May 8, 2024 were analyzed 92 days past extraction. The PFAS results of samples F-BIOAO2_FRN01_20240508, F-BIOCO4_FRN02_20240508, and BIOCO4_FRN01_20240508, all undetected, were qualified as estimated detection limit (UJ, HAHL).

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations (RSDs) between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries of target analytes were between the acceptance limits of 70 and 130%.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical sequence, concentrations were equivalent to the LOQ and signal to noise ratios were greater than or equal to 3:1. With one exception, the recoveries were within the method-specified 70 to 130% limits.

- The PFUnA_2 recovery was low at 65.42% in the ISC associated with the samples. Data quality is not affected and data qualifiers are not required because the ISC recovery of the quantitation ion for PFUnA is acceptable.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Target analyte recoveries were within the method-specified 70 to 130% limits.

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid.

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks associated with the sample reviewed in this report. Equipment blanks were not collected with this data set.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ. The LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits, with the following exceptions.

- The PFMPA and 3:3 FTCA recovery values in the LCS associated with the samples are above criteria at 180% and 160%, respectively. Neither PFMPA nor 3:3 FTCA were detected in the samples. Data usability is not adversely affected by the potential high analytical bias.
- The 3:3 FTCA recovery value in the LLCS associated with the samples is above criteria at 153%. 3:3 FTCA was detected in the samples. Data usability is not adversely affected by the potential high analytical bias.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

Battelle performed MS and/or MSD analyses on sample F-BIOA02_FRN01_20240508. With the following exceptions, recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between MS and MSD results were less than 30%.

- The PFDoS MS recovery value is above criteria at 151%. Data qualifiers are not required because the MSD recovery is acceptable at 143%.
- The NFDHA MS and MSD recovery values are above criteria at 245 and 260%. Data qualifies are not required because the bias is high and NFDHA was not detected in sample F-BIOA02_FRN01_20240508.

7.1.11 LABORATORY DUPLICATE PRECISION

Battelle performed MSD analyses on sample F-BIOA02_FRN01_20240508. Precision between duplicate analyses was acceptable with RPDs less than 30% or differences between analyte concentrations less than the LOQ.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the QAPP-specified limits of 20 to 150%, with the following exceptions:

- Recovery values of the EISs $^{13}C_3$-PFBS, $^{13}C_4$-4:2-FTS, and $^{13}C_2$-6:2-FTS were above criteria in sample F-BIOA02_FRN01_20240508 at 168, 358, and 236%, respectively. Data quality is not affected and data qualifiers are not required because the recoveries are high and neither PFBS, 4:2-FTS, nor 6:2-FTS were detected sample F-BIOA02_FRN01_20240508.
- Recovery values of the EISs $^{13}C_2$-4:2-FTS, $^{13}C_2$-6:2-FTS, and $^{13}C_2$-8:2-FTS were above criteria for samples F-BIOC04_FRN02_20240508 and F-BIOBP01_FRN01_20240510 with values ranging from 151 to 275%. Data quality is not affected, and data qualifiers are not required because the recoveries are high and 4:2-FTS, 6:2-FTS, and 8:2-FTS were not detected in samples F-BIOC04_FRN02_20240508 or F-BIOBP01_FRN01_20240510.
- Recoveries of the EIS d_3-MeFOSA and d_5-EtFOSA were below criteria for samples F-BIOC04_FRN02_20240508, F-BIOC05_FRN01_20240508, and F-BIOBP01_FRN01_20240510 with values ranging from 12 to 19%. WSP qualified the MeFOSA and EtFOSA results, all undetected, of samples F-BIOC04_FRN02_20240508, F-BIOC05_FRN01_20240508, and F-BIOBP01_FRN01_20240510 as estimated detection limit (UJ, EISL).
- Recovery values of the EISs $^{13}C_2$-4:2-FTS and $^{13}C_2$-6:2-FTS were above criteria for sample F-BIOC05_FRN01_20240508 at 259 and 281%. Data quality is not affected and data qualifiers are not required

because the recoveries are high and 4:2-FTS and 6:2-FTS were not detected in sample F-BIOC05_FRN01_20240508.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NISs were added to the samples, standards, and QC samples as required. With the following exceptions, the recoveries for field samples were within the method-specified 50 to 200% limits.

- Recovery of the NISs $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, $^{18}O_2$-PFHxS, and $^{13}C_4$-PFOAS were below criteria for samples F-BIOA02_FRN01_20240508, F-BIOC04_FRN02_20240508, and F-BIOC05_FRN01_20240508 with values ranging from 25 to 48%. Data limitations are summarized below.
- Recovery of the NISs $^{13}C_2$-PFHxA, $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{18}O_2$-PFHxS were below criteria for sample F-BIOBP01_FRN01_20240510 with values ranging from 30 to 48%. Data limitations are summarized below.
  - Following the DoD data validation guidelines, NIS recoveries between 30 and 50% do not require qualification.
  - Per the DoD data validation guidelines, WSP UJ qualified the PFDA results of samples F_BIOA02_FRN01_20240508 and F_BIOC05_FRN01_20240508 because the NIS recovery was below 30%. (UJ, ISL)
- Recoveries of the several NISs were below criteria in the MS and MSD analyses of sample F_BIOA02_FRN01_20240508, mimicking the recovery pattern of the original sample. WSP assessed the MSD based on target analyte recoveries and no data were qualified based on the low NIS recovery.

7.1.14 ION RATIOS

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV, with one exception.

- The ion ratio is below the 50% criteria for PFOA in the MSD analysis of sample F-BIOA02_FRN01_20240508. The sample was reanalyzed to verify the exceedance. Data qualifiers are not required for laboratory QC samples.

7.1.15 STAGE 4 VALIDATION

WSP perform Stage 4 validation on the samples in Battelle laboratory report 24-0609. The sample results were correctly calculated including mass or volume extracted and any dilution factors.

7.1.16 DATA REPORTING AND ANALYTICAL PROCEDURES

Battelle voluntarily revised the report to corrected errors in the MS/MSD reporting. No data reporting or analytical procedure anomalies were noted in Battelle report 24-0609.

8 FIELD DUPLICATE PRECISION

Field duplicates were not collected with this data set.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 384 data records from the field sample during this validation. Validated analytical results are presented in Table 2.

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- UJ: WSP UJ qualified 120 records (31.2%) due to missing holding time and/or low EIS or NIS recoveries outside of limits.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
24-0609	A02	F-BIOA02_FRN01_20240508	C4138-FS	5/8/2024	TP	N	40
	C04	F-BIOC04_FRN02_20240508	C4139-FS	5/8/2024	TP	N	40
	C05	F-BIOC05_FRN01_20240508	C4140-FS	5/8/2024	TP	N	40
	PB01	F-BIOPB01_FRN01_20240510	C4141-FS	5/10/2024	TP	N	40

Notes:

N = Normal Field Sample

TP = Plant Tissue

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/2/24
Checked by: KJG
Date: 1/7/25

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program - Stage 4 - Report 2
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0609								
			Location	A02		C04		C05		PB01		
			Sample Date	5/8/2024		5/8/2024		5/8/2024		5/10/2024		
			Sample ID	F-BIOA02_FRN01_20240508		F-BIOC04_FRN02_20240508		F-BIOC05_FRN01_20240508		F-BIOPB01_FRN01_20240510		
			QC Code	N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.452	UJ	0.112	UJ	0.112	UJ	0.112	U	
		Perfluoropentanoic acid (PFPeA)	NG/G	0.435	UJ	0.108	UJ	0.108	UJ	0.108	U	
		Perfluorohexanoic acid (PFHxA)	NG/G	0.298	UJ	0.074	UJ	0.0739	UJ	0.0741	U	
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.282	UJ	0.07	UJ	0.0699	UJ	0.0701	U	
		Perfluorooctanoic acid (PFOA)	NG/G	0.202	UJ	0.05	UJ	0.05	UJ	0.0501	U	
		Perfluorononanoic acid (PFNA)	NG/G	0.29	UJ	0.072	UJ	0.0719	UJ	0.0721	U	
		Perfluorodecanoic acid (PFDA)	NG/G	0.315	UJ	0.078	UJ	0.0779	UJ	0.0781	U	
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.242	UJ	0.06	UJ	0.0599	UJ	0.0601	U	
		Perfluorododecanoic acid (PFDoA)	NG/G	0.194	UJ	0.048	UJ	0.048	UJ	0.048	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.315	UJ	0.078	UJ	0.0779	UJ	0.0781	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.25	UJ	0.062	UJ	0.0619	UJ	0.0621	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.274	UJ	0.068	UJ	0.0679	UJ	0.0681	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.161	UJ	0.04	UJ	0.04	UJ	0.04	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.242	UJ	0.06	UJ	0.0599	UJ	0.0601	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.282	UJ	0.07	UJ	0.0699	UJ	0.0701	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/G	0.315	UJ	0.078	UJ	0.0779	UJ	0.0781	U	
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.319	UJ	0.079	UJ	0.0789	UJ	0.0791	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.266	UJ	0.066	UJ	0.0659	UJ	0.0661	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.153	UJ	0.038	UJ	0.038	UJ	0.038	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	1.06	UJ	0.264	UJ	0.264	UJ	0.264	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	0.653	UJ	0.162	UJ	0.162	UJ	0.162	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.645	UJ	0.16	UJ	0.16	UJ	0.16	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.129	UJ	0.032	UJ	0.032	UJ	0.032	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.0806	UJ	0.02	UJ	0.02	UJ	0.02	UJ	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.274	UJ	0.068	UJ	0.0679	UJ	0.0681	UJ	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.298	UJ	0.074	UJ	0.0739	UJ	0.0741	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.306	UJ	0.076	UJ	0.0759	UJ	0.0761	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	1.54	UJ	0.382	UJ	0.382	UJ	0.382	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	1.61	UJ	0.4	UJ	0.4	UJ	0.4	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.935	UJ	0.232	UJ	0.232	UJ	0.232	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.726	UJ	0.18	UJ	0.18	UJ	0.18	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.556	UJ	0.138	UJ	0.138	UJ	0.138	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.435	UJ	0.108	UJ	0.108	UJ	0.108	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.169	UJ	0.042	UJ	0.042	UJ	0.042	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	1.01	UJ	0.25	UJ	0.25	UJ	0.25	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.96	UJ	0.238	UJ	0.238	UJ	0.238	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.282	UJ	0.07	UJ	0.0699	UJ	0.0701	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.395	UJ	0.098	UJ	0.0979	UJ	0.0981	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	5.52	UJ	1.37	UJ	1.37	UJ	1.37	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	2.98	UJ	0.74	UJ	0.739	UJ	0.741	U	

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Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4138-FS	F-BIOA02_FRN01_20240508	Perfluorobutanoic acid (PFBA)	0.224	UT	0.224	UJ	HAHL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.215	UT	0.215	UJ	HAHL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.148	UT	0.148	UJ	HAHL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.141	UT	0.141	UJ	HAHL	NG/G
					Perfluorooctanoic acid (PFOA)	0.101	UT	0.101	UJ	HAHL	NG/G
					Perfluorononanoic acid (PFNA)	0.143	UT	0.143	UJ	HAHL	NG/G
					Perfluorodecanoic acid (PFDA)	0.156	UT	0.156	UJ	HAHL, ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.121	UT	0.121	UJ	HAHL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.096	UT	0.096	UJ	HAHL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.156	UT	0.156	UJ	HAHL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.125	UT	0.125	UJ	HAHL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.135	UT	0.135	UJ	HAHL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0778	UT	0.0778	UJ	HAHL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.119	UT	0.119	UJ	HAHL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.139	UT	0.139	UJ	HAHL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.154	UT	0.154	UJ	HAHL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.159	UT	0.159	UJ	HAHL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.132	UT	0.132	UJ	HAHL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0744	UT	0.0744	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.531	UT	0.531	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.327	UT	0.327	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.321	UT	0.321	UJ	HAHL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0609	UT	0.0609	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.037	UT	0.037	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.135	UT	0.135	UJ	HAHL	NG/G

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Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4138-FS	F-BIOA02_FRN01_20240508	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.148	UT	0.148	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.152	UT	0.152	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.77	UT	0.77	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.806	UT	0.806	UJ	HAHL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.465	UT	0.465	UJ	HAHL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.361	UT	0.361	UJ	HAHL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.276	UT	0.276	UJ	HAHL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.217	UT	0.217	UJ	HAHL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0831	UT	0.0831	UJ	HAHL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.502	UT	0.502	UJ	HAHL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.477	UT	0.477	UJ	HAHL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.14	UT	0.14	UJ	HAHL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.194	UT	0.194	UJ	HAHL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	2.76	UT	2.76	UJ	HAHL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	1.49	UT	1.49	UJ	HAHL	NG/G
	E1633DR	T	C4139-FS	F-BIOC04_FRN02_20240508	Perfluorobutanoic acid (PFBA)	0.0556	UT	0.0556	UJ	HAHL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.0532	UT	0.0532	UJ	HAHL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0368	UT	0.0368	UJ	HAHL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.035	UT	0.035	UJ	HAHL	NG/G
					Perfluorooctanoic acid (PFOA)	0.025	UT	0.025	UJ	HAHL	NG/G
					Perfluorononanoic acid (PFNA)	0.0354	UT	0.0354	UJ	HAHL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0386	UT	0.0386	UJ	HAHL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.03	UT	0.03	UJ	HAHL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: KJG
Date: 1/2/25

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Data Validation Report
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2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4139-FS	F-BIOC04_FRN02_20240508	Perfluorododecanoic acid (PFDoA)	0.0238	UT	0.0238	UJ	HAHL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0388	UT	0.0388	UJ	HAHL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.031	UT	0.031	UJ	HAHL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.0336	UT	0.0336	UJ	HAHL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0193	UT	0.0193	UJ	HAHL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.0296	UT	0.0296	UJ	HAHL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.0344	UT	0.0344	UJ	HAHL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0382	UT	0.0382	UJ	HAHL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0394	UT	0.0394	UJ	HAHL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.0328	UT	0.0328	UJ	HAHL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0185	UT	0.0185	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.132	UT	0.132	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.081	UT	0.081	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0796	UT	0.0796	UJ	HAHL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0151	UT	0.0151	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	UT	0.00918	UJ	HAHL, EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	UT	0.0334	UJ	HAHL, EISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0366	UT	0.0366	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0378	UT	0.0378	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.191	UT	0.191	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	UT	0.2	UJ	HAHL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.115	UT	0.115	UJ	HAHL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.0896	UT	0.0896	UJ	HAHL	NG/G

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Date:1/2/25
Checked by: KJG
Date: 1/2/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4139-FS	F-BIOC04_FRN02_20240508	Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0684	UT	0.0684	UJ	HAHL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0538	UT	0.0538	UJ	HAHL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0206	UT	0.0206	UJ	HAHL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.124	UT	0.124	UJ	HAHL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.118	UT	0.118	UJ	HAHL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0348	UT	0.0348	UJ	HAHL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0482	UT	0.0482	UJ	HAHL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.684	UT	0.684	UJ	HAHL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.37	UT	0.37	UJ	HAHL	NG/G
	E1633DR	T	C4140-FS	F-BIOC05_FRN01_20240508	Perfluorobutanoic acid (PFBA)	0.0555	UT	0.0555	UJ	HAHL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.0531	UT	0.0531	UJ	HAHL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0368	UT	0.0368	UJ	HAHL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.035	UT	0.035	UJ	HAHL	NG/G
					Perfluorooctanoic acid (PFOA)	0.025	UT	0.025	UJ	HAHL	NG/G
					Perfluorononanoic acid (PFNA)	0.0354	UT	0.0354	UJ	HAHL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0386	UT	0.0386	UJ	HAHL, ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.03	UT	0.03	UJ	HAHL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0238	UT	0.0238	UJ	HAHL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0388	UT	0.0388	UJ	HAHL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.031	UT	0.031	UJ	HAHL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.0336	UT	0.0336	UJ	HAHL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0193	UT	0.0193	UJ	HAHL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.0296	UT	0.0296	UJ	HAHL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.0344	UT	0.0344	UJ	HAHL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0382	UT	0.0382	UJ	HAHL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0394	UT	0.0394	UJ	HAHL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: KJG
Date: 1/2/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4140-FS	F-BIOC05_FRN01_20240508	Perfluorodecanesulfonic acid (PFDS)	0.0328	UT	0.0328	UJ	HAHL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0184	UT	0.0184	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.131	UT	0.131	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.0809	UT	0.0809	UJ	HAHL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0795	UT	0.0795	UJ	HAHL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0151	UT	0.0151	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	UT	0.00917	UJ	HAHL, EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	UT	0.0334	UJ	HAHL, EISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0366	UT	0.0366	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0378	UT	0.0378	UJ	HAHL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.191	UT	0.191	UJ	HAHL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	UT	0.2	UJ	HAHL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.115	UT	0.115	UJ	HAHL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.0895	UT	0.0895	UJ	HAHL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0683	UT	0.0683	UJ	HAHL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0537	UT	0.0537	UJ	HAHL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0206	UT	0.0206	UJ	HAHL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.124	UT	0.124	UJ	HAHL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.118	UT	0.118	UJ	HAHL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0348	UT	0.0348	UJ	HAHL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0482	UT	0.0482	UJ	HAHL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: KJG
Date: 1/2/25

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring 2024 - SDG 24-0609

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0609	E1633DR	T	C4140-FS	F-BIOC05_FRN01_20240508	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.683	UT	0.683	UJ	HAHL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.37	UT	0.37	UJ	HAHL	NG/G
	E1633DR	T	C4141-FS	F-BIOPB01_FRN01_20240510	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00919	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL	NG/G

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NJ = Analyte has been tentatively identified and concentration is estimated

EISL = Low extracted internal standard recovery

HAHL = Holding time: extraction to analysis holding time exceeded

ISL = Low NIS recovery

NG/G = nanograms per gram

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:1/2/25
Checked by: KJG
Date: 1/2/25

DATA VALIDATION REPORT

AUGUST AND SEPTEMBER 2024 TISSUE, LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JANUARY 29, 2025

DATA VALIDATION REPORT

AUGUST AND SEPTEMBER 2024 TISSUE, LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

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January 29, 2025

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Reviewed/Approved By: Marie Bevier Date: 2/3/2025

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
5:3 FTCA	2H,2H,3H,3H-perfluorooctanoic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
9Cl-PF3ONS	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
ADONA	4,8-dioxa-3H-perfluorononanoic acid
Batelle	Batelle Norwell Operations
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomer sulfonic acid
HFPO-DA	hexafluoropropylene oxide dimer acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NFDHA	nonafluoro-3,6-dioxaheptanoic acid
NIS	non-extracted internal standard
NMeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoDA	perfluorododecanoic acid
PFDoDS	perfluorododecanesulfonic acid
PFDS	perfluorodecanesulfonic acid
PFEESA	perfluoro(2-ethoxyethane)sulfonic acid

PFHpA	perfluoroheptanoic acid
PFHpS	perfluoroheptanesulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFMPA	perfluoro-3-methoxypropanoic acid
PFPeA	perfluoropentanoic acid
PFPeS	perfluoropentanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFNA	perfluorononanoic acid
PFNS	perfluorononanesulfonic acid
PFTeDA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 79 tissue samples between 13 August and 13 September 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to Batelle Norwell Operations (Batelle), located in Norwell, Massachusetts, where they were received between 16 August and 18 September 2024. Batelle assigned the samples to sample delivery groups 24-0652, 24-0698, 24-0699, 24-0700, 24-0783, 24-0784, and 24-0885 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) Stage 2B validation on 100 percent (%) of Batelle's data for the samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms. Stage 2B validation does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan (QPP) Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2024. Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), January.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ISC;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by PFAS recovery in laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MS/MS duplicates (MSDs);

- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISH	High EIS recovery.
EISL	Low EIS recovery.
IAG	Ion transition ratio is outside of expected limits.
ISL	Low NIS recovery.
LCL	Low LCS recovery. Result may be biased low.
LDD	Imprecision between primary sample and laboratory duplicate results.
MSD	Imprecision between MS and MSD results.
MSH	High MS recovery. Result may be biased high.
MSL	Low MS recovery. Result may be biased low.
TR	The detected analyte concentration is less than the limit of quantitation (LOQ).

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report are considered usable with the limitations and exceptions described in Sections 7.1 through 8.0. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Batelle may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 90 days from sample preparation (filleting and/or grinding) and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 ION TRANSITIONS

Parent, quantification, and confirmation ion masses used for the analysis of the samples reviewed in this report matched the ions specified in EPA Method 1633 Table 10.

7.1.4 INITIAL CALIBRATION COMPLIANCE

Initial calibrations relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.5 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.6 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.7 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) recovery was high at 131% in the closing CCV associated with the analysis of samples E-T-BIOA_PLT01_20240910, E-T-BIOF_PLT01_20240910, E-T-BIOI_PLT01_20240910, E-T-BIOJ_PLT01_20240910, and E-T-BIOP_PLT01_20240910. Based on the DoD data valuation guidelines, WSP UJ qualified the non-detect 11Cl-PF3OUdS results in the associated samples due to potential high analytical bias. (UJ, CVHL)
- Perfluorononanesulfonic acid (PFNS [59%]), perfluorodecanesulfonic acid (PFDS [64%]) and perfluorododecanesulfonic acid (PFDoDS [58%]) recoveries were low in the opening CCV associated with the dilution analysis of samples E-A-BIOF_FSH01_20240817, E-A-BIOG_FSH01_20240817, E-A-BIOK_FSH01_20240817, and E-A-BIOA_FSH01_20240820. PFNS, PFDS, and PFDoDS were not reported from the associated analyses and data usability is not adversely affected by the low CCV recoveries.
- PFNS recoveries were low at 66% and 59% in the opening and closing CCVs associated with the dilution analysis of samples E-T-BIOC_RNT01_20240911 and E-T-BIOC_RNT02_20240913. PFNS was not reported from the associated analyses and data usability is not adversely affected by the low CCV recoveries.

7.1.8 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.9 LABORATORY AND CALIBRATION BLANK DETECTIONS

Target analytes were not detected in the laboratory and calibration blanks associated with the sample reviewed in this report.

7.1.10 LABORATORY CONTROL SAMPLE ACCURACY

Low-level LCS (LLLCS) and LCS were included with each extraction batch, LLLCS spike concentrations were twice the LOQ, and LCS and LLLCS recoveries were within method-specified limits, with the following exceptions:

- Perfluorobutanesulfonic acid (PFBS) and perfluoro-4-methoxybutanoic acid (PFMBA) recoveries were low at 46% and 30%, respectively, in the LCS associated with the extraction of samples E-T-BIOA_PLT01_20240910, E-T-BIOF_PLT01_20240910, E-T-BIOI_PLT01_20240910, E-T-BIOJ_PLT01_20240910, and E-T-BIOP_PLT01_20240910. WSP UJ qualified the non-detected PFBS and PFMBA results from the associated samples due to potential low analytical bias. (UJ, LCL)
- PFBS (56%), 4,8-dioxa-3H-perfluorononanoic acid (ADONA [174%]), and PFMBA (31%) recoveries were outside of limits in the LLLCS associated with the extraction of samples E-T-BIOA_PLT01_20240910, E-T-BIOF_PLT01_20240910, E-T-BIOI_PLT01_20240910, E-T-BIOJ_PLT01_20240910, and E-T-BIOP_PLT01_20240910. Data limitations are summarized below.
    - WSP UJ qualified the non-detect PFBS and PFMBA results from the associated samples due to potential low analytical bias. (UJ, LCL)

- ADONA was not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.

– 3-Perfluoroheptyl propanoic acid (7:3 FTCA) recovery was high at 181% in the LCS associated with the extraction of samples E-T-BIOD_RNT01_20240816, E-T-BIOI_RNT01_20240814, E-T-BIOJ_RNT01_20240815, E-T-BIOK_RNT01_20240814, E-T-BIOL_RNT01_20240814, E-T-BION_RNT01_20240813, E-T-BIOQ_RNT01_20240816, E-A-BIOC_INV01_20240816, E-T-BIOC_RNT01_20240911, E-T-BIOC_RNT02_20240913, E-T-BIOE_RNT01_20240911, E-T-BIOF_RNT01_20240912, and E-T-BIOP_RNT01_20240911. 7:3 FTCA was not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.

– 2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA) and 7:3 FTCA recoveries were high at 159% and 191%, respectively, in the LLLCS associated with the extraction of samples E-T-BIOD_RNT01_20240816, E-T-BIOI_RNT01_20240814, E-T-BIOJ_RNT01_20240815, E-T-BIOK_RNT01_20240814, E-T-BIOL_RNT01_20240814, E-T-BION_RNT01_20240813, E-T-BIOQ_RNT01_20240816, E-A-BIOC_INV01_20240816, E-T-BIOC_RNT01_20240911, E-T-BIOC_RNT02_20240913, E-T-BIOE_RNT01_20240911, E-T-BIOF_RNT01_20240912, and E-T-BIOP_RNT01_20240911. 5:3 FTCA and 7:3 FTCA were not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.

7.1.11 MATRIX SPIKE ACCURACY AND PRECISION

Batelle performed MS and/or MSD analyses on samples E-A-BIOT_PLT01_20240814, E-T-BIOC_INV02_20240815, E-T-BIOK_INV01_20240814, E-T-BIOI_RNT01_20240814, and E-T-BIOL_RNT01_20240814. Recoveries were within the method specified limits and RPDs between MS and MSD results were less than the QAPP specified maxima of 30%, with the following exceptions:

– 3-Perfluoropropyl propanoic acid (3:3 FTCA [168%, MS]), 5:3 FTCA (359%, 358%), 7:3 FTCA (472%, 569%), 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS [409%, 631%]), ADONA (232%, MSD), nonafluoro-3,6-dioxaheptanoic acid (NFDHA [319%, 312%]), perfluoro(2-ethoxyethane)sulfonic acid (PFEESA [299%, 255%]), perfluoro-3-methoxypropanoic acid (PFMPA [156%, MS]), perfluorododecanoic acid (PFDoDA [56%, MSD]), PFOS (0%, 0%), perfluoropentanesulfonic acid (PFPeS [3%,3%]), perfluorohexanesulfonic acid (PFHxS [0%, MS]), and PFDoDS (22%, MSD) recoveries were outside limits in the MS and/or MSD performed on sample E-T-BIOK_INV01_20240814. Additionally, RPDS between the MS and MSD results were high for 3:3 FTCA (74%), 9Cl-PF3ONS (43%), ADONA (38%), PFDoDS (34%), perfluoroheptanesulfonic acid (PFHpS [36%]), PFHxS (200%), PFMPA (56%), perfluorotetradecanoic acid (PFTeDA [48%]), and perfluorotridecanoic acid (PFTrDA [34%]). Data limitations are summarized below.

  - WSP R qualified and rejected the non-detect PFPeS result from the associated sample due to potential extremely low analytical bias. (R, MSL)
  - WSP J+ qualified the detected 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA and results from the associated sample due to potential high analytical bias. (J+, MSH)
  - WSP J- qualified the detected PFDoDA and PFDoDS results from the associated sample due to potential low analytical bias. (J-, MSL)
  - WSP J qualified the detected 3:3 FTCA, PFDoDS, PFHpS, PFTeDA, PFTrDA, and PFHxS results from the associated sample due to potential analytical imprecision. (J, MSD)
  - PFHxS and PFOS were detected in the unspiked native sample at concentrations greater than four times the spike concentrations and data usability cannot be assessed based on MS recoveries.
  - 9Cl-PF3ONS, ADONA, NFDHA, PFEESA, and PFMPA were not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.

– PFMBA recovery was low at 52% in the MS performed on sample E-A-BIOT_PLT01_20240814. WSP UJ qualified the non-detected PFMBA result from the associated sample due to potential low analytical bias. (UJ, MSL)

- 5:3 FTCA(173%, MSD), 9Cl-PF3ONS (176%, MS), PFOS (299%, 174%), PFPeS (35%, MS), and PFHxS (211%, MS) recoveries were high in the MS and/or MSD performed on sample E-T-BIOC_INV02_20240815. Additionally, RPDs between MS and MSD results were high for perfluorooctanoic acid (PFOA [32%]), PFHxS (90%), and PFOS (53%). Data limitations are summarized below.
  - WSP J+ qualified the detected 5:3 FTCA result from the associated sample due to potential high analytical bias. (J+, MSH)
  - WSP J qualified the detected PFOA, PFHxS, and PFOS results from the associated sample due to potential analytical imprecision. (J, MSD)
  - PFPeS, PFHxS, and PFOS were detected in the unspiked native sample at concentrations greater than four times the spike concentrations and data usability cannot be assessed based on MS recoveries.
  - 9Cl-PF3ONS was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
- PFOS recovery was low at 51% in the MS performed on sampled E-T-BIOI_RNT01_20240814. Additionally, the RPD between MS and MSD results for PFOS was high at 33%. WSP J- qualified the detected PFOS result from the associated sample due potential low analytical bias and potential analytical imprecision. (J-, MSL/MSD)
- PFHxS (58%, MS), 5:3 FTCA (189%, 203%) and 7:3 FTCA (246%, 260%) recoveries were outside of limits in the MS and MSD performed on sampled E-T-BIOL_RNT01_20240814. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFHxS result from the associated sample due to potential low analytical bias. (UJ, MSL)
  - 5:3 FTCA and 7:3 FTCA were not detected in the unspiked native sampled and data usability is not adversely affected by potential high analytical bias.

7.1.12 LABORATORY DUPLICATE PRECISION

Batelle performed duplicate analyses on samples E-A-BIOT_PLT01_20240814, E-T-BIOC_INV02_20240815, ET_BIOE_INV01_20240818, E-T-BIOK_INV01_20240814, E-A-BIOH_INV01_20240819, E-A-BIOL_INV01_20240815, E-A-BIOF_FSH01_20240817, E-A-BIOJ_FSH01_20240815, E-T-BIOI_RNT01_20240814, E-T-BIOL_RNT01_20240814, and E-T-BIOF_RNT01_20240912. RPDs were less than the QPP-specified maximum of 30%, with the following exceptions:

- RPDs between perfluorooctanesulfonamide (PFOSA [50%]), 5:3 FTCA (41%), and 7:3 FTCA (60%) results were high in the duplicate analysis performed on sample E-T-BIOC_INV02_20240815. WSP J qualified the detect results in the associated sample due to potential analytical imprecision. (J, LDD)
- The RPD between PFOS results was high at 39% in the duplicate analysis performed on sample E-T-BIOE_INV01_20240818. WSP J qualified the detect PFOS result in the associated sample due to potential analytical imprecision. (J, LDD)
- The RPD between 5:3 FTCA results was high at 39% in the duplicate analysis performed on sample E-T-BIOK_INV01_20240814. WSP J qualified the detect 5:3 FTCA result in the associated sample due to potential analytical imprecision. (J, LDD)

7.1.13 EXTRACTED INTERNAL STANDARD ACCURACY

Based on professional judgement, WSP rejected results quantified against EISs with recoveries less than 10%, unless the method-specified lower limit was 5 or 10%, then WSP used half the lower limit (2 or 5%) as the recovery threshold for rejection.

EIS recoveries in the field samples were within the method specified limits, with the following exceptions:

- Recoveries of EISs $^{13}C_4$-perfluoroheptanoic acid (PFHpA) and $^{13}C_2$-PFTeDA were low at 7% and 19%, respectively, in the analysis of sample E-T-BIOD_INV02_20240815. WSP J+ qualified the detected PFHpA, PFTrDA. and PFTeDA results from the associated sample due to low EIS recoveries. (J+, EISL)
- Recovery of EIS D_9-N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) was low at 3% in the analysis of sample E-A-BIOJ_FSH01_20240815. Based on professional judgement, WSP UJ qualified the non-detected NEtFOSE result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of EIS D_9-NEtFOSE was extremely low at 1% in the analysis of sample E-A-BIOPB_FSH01_20240820. WSP R qualified and rejected the non-detected NEtFOSE result from the associated sample due to extremely low EIS recovery. (R, EISL)
- Recoveries of EISs $^{13}C_4$-perfluorobutanoic acid (PFBA [4%]), $^{13}C_5$-perfluoropentanoic acid (PFPeA [7%]), $^{13}C_3$-PFBS (16%), and $^{13}C_3$-hexafluoropropylene oxide dimer acid (HFPO-DA [7%]) were low in the analysis of sample E-T-BIOI_PLT01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detected PFPeA, PFBS, HFPO-DA, ADONA, PFMPA, PFMBA, 9Cl-PF3ONS, 11Cl-PF3OUdS, and 3:3 FTCA results from the associated sample due to extremely low EIS recoveries. (UJ, EISL)
  - WSP J+ qualified the detected PFBA result from the associated sample due to low EIS recovery. (J+, EISL)
- Recoveries of EISs $^{13}C_4$-PFBA (4%), $^{13}C_5$-PFPeA (9%), $^{13}C_4$-PFHpA (16%) and $^{13}C_3$-HFPO-DA (5%) were low in the analysis of sample E-T-BIOA_PLT01_20240910. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detected HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS results from the associated sample due to extremely low EIS recoveries. (R, EISL)
  - WSP J+ qualified the detected PFBA and PFPeA results from the associated sample due to low EIS recoveries. (J+, EISL)
  - WSP UJ qualified the non-detected PFMPA, 3:3 FTCA, and PFHpA result from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of EISs $^{13}C_5$-PFPeA and $^{13}C_3$-HFPO-DA were low at 5% and 13%, respectively, in the analysis of sample E-T-BIOJ_PLT01_20240910. WSP UJ qualified the non-detected PFPeA, PFMPA, PFMBA, 3:3 FTCA, HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of EISs $^{13}C_4$-PFBA (3%), $^{13}C_5$-PFPeA (7%), and $^{13}C_3$-HFPO-DA (16%) were outside of limits in the analysis of sample E-T-BIOP_PLT01_20240910. WSP J+ qualified the detected and UJ qualified the non-detected PFBA, PFPeA, PFMPA, PFMBA, 3:3 FTCA, HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS results from the associated sample due to low EIS recoveries. (J+/UJ, EISL)
- Recoveries of EISs D_5- N-ethyl perfluorooctanesulfonamide (NEtFOSA) and D_9-NEtFOSE were low at 4% and 1%, respectively, in the analysis of sample E-T-BIOK_RNT01_20240814. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detected NEtFOSE result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect NEtFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of EIS D_9-NEtFOSE was extremely low at 1% in the analysis of sample E-T-BION_RNT01_20240813. WSP R qualified and rejected the non-detected NEtFOSE result from the associated sample due to extremely low EIS recoveries. (R, EISL)
- Recoveries of EISs $^{13}C_2$-6:2 fluorotelomer sulfonic acid (FTS) and D_9-NEtFOSE were outside of limits at 384% and 4%, respectively, in the analysis of sample E-T-BIOC_RNT01_20240911. Data limitations are summarized below.

  - WSP UJ qualified the non-detected NEtFOSE result from the associated sample due to low EIS recovery. (UJ, EISL)
  - WSP J- qualified the detected 6:2 FTS result from the associated sample due to high EIS recovery. (J-, EISH)

- Recovery of EISs $^{13}C_4$-PFHpA was low at 10% in the analysis of sample E-T-BIOC_INV01_20240815. WSP J+ qualified the detected PFHpA result from the associated sample due to low EIS recovery. (J+, EISL)
- Recoveries of EISs $^{13}C_4$-PFHpA and $^{13}C_2$-PFTeDA were low at 16% and 19%, respectively, in the analysis of sample E-T-BIOC_INV02_20240815. Data limitations are summarized below.
  - WSP J+ qualified the detect PFTrDA result from the associated sample due to low EIS recovery. (J+, EISL)
  - WSP UJ qualified the non-detect PFHpA and PFTeDA results from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of EISs $^{13}C_5$-PFPeA and $^{13}C_4$-PFHpA were outside limits at 208% and 24%, respectively, in the analysis of sample E-T-BIOD_INV01_20240815. Data limitations are summarized below.
  - WSP J- qualified the detect PFPeA result from the associated sample due to high EIS recovery (J-, EISH)
  - WSP UJ qualified the non-detected PFHpA result from the associated sample due to low EIS recovery. (UJ, EISL)
  - 3:3 FTCA, PFMBA, and PFMPA were not-detect in the associated sample and data usability is not adversely affect by high EIS recovery.
- Recovery of EIS $^{13}C_4$-PFHpA was low at 15% in the analysis of sample E-T-BIOI_INV01_20240816. WSP UJ qualified the non-detect PFHpA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of EIS $^{13}C_4$-PFHpA was low at 13% in the analysis of sample E-T-BIOI_INV02_20240816. WSP UJ qualified the non-detect PFHpA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_4$-PFHpA and $^{13}C_8$-PFOSA were outside of limits at 12% and 208%, respectively, in the analysis of sample E-T-BIOJ_INV01_20240816. Data limitations are summarized below.
  - WSP J+ qualified the detect PFHpA result from the associated sample due to low EIS recovery. (J+, EISL)
  - WSP J- qualified the detected PFOSA result from the associated sample due to high EIS recovery. (J-, EISH).
- Recoveries of the EISs $^{13}C_5$-PFPeA and $^{13}C_4$- PFHpA were outside limits at 187% and 14%, respectively, in the analysis of sample E-T-BIOK_INV01_20240814. Data limitations are summarized below.
  - WSP J- qualified the detect PFPeA result from the associated sample due to high EIS recovery. (J-, EISH)
  - The 3:3 FTCA result was previously J+ qualified because of high MS recovery. WSP changed the J+ qualifiers to a J qualifier because the high EIS recovery would result in potential low analytical bias. (J, EISH)
  - WSP UJ qualified the non-detect PFHpA result from the associated sample due to low EIS recovery (UJ, EISL)
  - PFMPA and PFMBA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EIS $^{13}C_4$-PFHpA were low in samples E-T-BIOM_INV01_20240816 (10%), E-T-BION_INV01_20240814 (11%), E-T-BIOO_INV01_20240814 (12%), and E-T-BIOQ_INV01_20240816 (10%) . WSP UJ qualified the non-detect PFHpA results from the associated samples due to low EIS recoveries. (UJ, EISL)

- Recoveries of EISs $^{13}C_4$-PFHpA and $^{13}C_2$-PFTeDA were low at 19% and 16%, respectively, in the analysis of sample E-T-BIOE_INV01_20240818. WSP UJ qualified the non-detect PFHpA, PFTrDA, and PFTeDA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of EISs $^{13}C_5$-PFPeA (251%), $^{13}C_4$-PFHpA (21%), and $^{13}C_2$-PFTeDA (15%) were outside of limits in the standard analysis of sample E-T-BIOG_INV01_20240817. Data limitations are summarized below.
  - WSP J+ qualified the detected PFHpA, PFTrDA and PFTeDA results from the associated sample due to low EIS recoveries. (J+, EISL)
  - WSP J- qualified the detect PFPeA result from the associated sample due to high EIS recovery. (J-, EISH)
  - PFMPA and PFMBA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
  - 3:3 FTCA was reported from a dilution and the data usability is not adversely affected by high EIS recovery in the standard analysis.
- Recovery of EIS $^{13}C_2$-6:2 FTS was high at 341% in the dilution analysis of sample E-T-BIOG_INV01_20240817. WSP J- qualified the detect 6:2 FTS result from the associated sample due to high EIS recovery. (J-, EISH)
- Recoveries of EISs $^{13}C_5$-PFPeA (224%), $^{13}C_2$-PFTeDA (11%), and $^{13}C_2$-4:2 FTS (27%) were outside of limits in the analysis of sample E-T-BIOH_INV01_20240817. Data limitations are summarized below.
  - WSP J- qualified the detect PFPeA and 3:3 FTCA results from the associated sample due to high EIS recovery. (J-, EISH)
  - WSP J+ qualified the detect PFTrDA and PFTeDA results from the associated sample due to low EIS recovery. (J+, EISL)
  - WSP UJ qualified the non-detect 4:2-FTS result from the associated sample due to low EIS recovery. (UJ, EISL)
  - PFMPA and PFMBA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EISs $^{13}C_4$-PFHpA (10%), $^{13}C_2$-PFTeDA (10%), $^{13}C_8$-PFOSA (223%), and $^{13}C_5$-PFPeA (175%) were outside limits in the analysis of sample E-T-BIOH_INV02_20240817. Data limitations are summarized below.
  - WSP J- qualified the detect PFOSA, PFPeA, and 3:3 FTCA results from the associated sample due to high EIS recoveries. (J-, EISH)
  - WSP J+ qualified the detect PFHpA, PFTrDA, and PFTeDA results from the associated sample due to low EIS recoveries. (J+, EISL)
  - PFMP AND PFMBA were not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of EISs $^{13}C_5$-PFPeA (193%), $^{13}C_4$-PFHpA (15%), and $^{13}C_2$-PFTeDA (16%) were outside limits in the analysis of sample E-T-BIOJ_INV02_20240816. Data limitations are summarized below.
  - WSP J- qualified the detect PFPeA and 3:3 FTCA results from the associated sample due to high EIS recovery. (J-, EISH)
  - WSP J+ qualified the detect PFHpA, PFTrDA, and PFTeDA results from the associated sample due to low EIS recoveries. (J+, EISL)
  - PFMPA and PFMBA were not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of EISs $^{13}C_4$-PFHpA and $^{13}C_2$-PFTeDA were low at 21% and 15%, respectively, in the analysis of sample E-T-BIOL_INV01_20240819. Data limitations are summarized below.

  - WSP J+ qualified the detect PFTrDA and PFTeDA results from the associated sample due to low EIS recovery. (J+, EISL)
  - WSP UJ qualified the non-detected PFHpA result from the associated sample due to low EIS recovery. (UJ, EISL)

- Recoveries of EISs $^{13}C_7$-perfluoroundecanoic acid (PFUnA [194%]), $^{13}C_8$-PFOS (164%), $^{13}C_2$-4:2 FTS (376%), $^{13}C_2$-6:2 FTS (450%), and d_5-N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA [289%]) were high in the analysis of sample E-A-BIOJ_INV01_20240815. Data limitations are summarized below.
  - WSP J- qualified the detected PFOS result from the associated sample due to high EIS recovery. (J-, EISH).
  - PFUnA, PFHpS, PFNS, PFDoDS, PFDS, 4:2 FTS, 6:2 FTS, and NEtFOSAA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EISs $^{13}C_2$-6:2 FTS (524%), $^{13}C_2$-8:2 FTS (399%), $^{13}C_8$-PFOSA (182%), and d_5-NEtFOSAA (264%) were high in the analysis of sample E-A-BIOK_INV01_20240816. WSP J- qualified the detected 6:2 FTS, 8:2 FTS, PFOSA, and NEtFOSAA results from the associated sample due to high EIS recoveries. (J-, EISH)
- Recoveries of EISs $^{13}C_2$-6:2 FTS and d_5-NEtFOSAA were high at 333% and 316%, respectively, in the analysis of sample E-A-BIOK_INV02_20240818. WSP J- qualified the detected 6:2 FTS and NEtFOSAA from the associated sample due to high EIS recoveries. (J-, EISH)
- Recovery of EIS $^{13}C_8$-PFOSA was high at 199% in the analysis of sample E-A-BIOK_FSH01_20240817. WSP J- qualified the detect PFOSA result from the associated sample due to high EIS recovery. (J-, EISH)
- Recoveries of EIS $^{13}C_4$-PFHpA were low in the analysis of samples E-T-BIOA_INV01_20240910 (19%), E-T-BIOB_INV01_20240910 (15%), and E-T-BIOP_INV01_20240910 (18%). WSP UJ qualified the non-detected PFHpA results from the associated samples due to low EIS recoveries. (UJ, EISL)
- Recovery of EIS d_5-NEtFOSAA was high at 245% in the analysis of sample E-T-BIOF_INV01_20240910. WSP J- qualified the detected NEtFOSAA result from the associated sample due to high EIS recovery. (J-, EISH)
- Recovery of EIS $^{13}C_3$-HFPO-DA was low at 19% in the analysis of sample E-T-BIOF_PLT01_20240910. WSP UJ qualified the non-detected HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS results from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of EIS $^{13}C_2$-6:2 FTS was high at 322% in the analysis of sample E-T-BIOC_RNT02_20240913. WSP J- qualified the detected 6:2 FTS result from the associated sample due to high EIS recovery. (J-, EISH)
- Recovery of EIS d_5-EtFOSA was high at 869% in the analysis of sample E-A-BIOP_PLT01_20240813. NEtFOSA was not detect in the associated sample data usability is not adversely affect by high EIS recovery.
- Recovery of EIS $^{13}C_3$-PFBS was high at 228% in the analysis of sample E-A-BIOU_PLT01_20240814. PFBS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of EISs d_5-NEtFOSAA and $^{13}C_3$-HFPO-DA were high at 237% and 390%, respectively, in the analysis of sample E-A-BIOB_INV01_20240817. NEtFOSAA, HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EISs $^{13}C_2$-6:2 FTS (360%), d_5-NEtFOSAA (245%), and $^{13}C_3$-HFPO-DA (189%) were high in the analysis of sample E-A-BIOG_INV01_20240818. 6:2 FTS, NEtFOSAA, HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EISs d_3- N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA [200%]), d_5-NEtFOSAA (239%) and $^{13}C_3$-HFPO-DA (193%) were high in the analysis of sample E-A-BIOH_INV01_20240819. NMeFOSAA, NEtFOSAA, HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EIS d_5-NEtFOSAA were high in the analysis of samples E-A-BION_INV01_20240815 (249%), E-A-BION_INV02_20240815 (246%), E-A-BIOCS_INV01_20240820 (237%), E-A-BIOE_INV01_20240819 (261%),

and E_A-BIOPB_INV01_20240820 (270%). NEtFOSAA was not detected in the associated samples and data usability is not adversely affected by high EIS recoveries.

- Recoveries of EISs $^{13}C_2$-6:2 FTS (374%) and d_5-NEtFOSAA (280%) were high at 374% and 280%, respectively, in the analysis of sample E-A-BIOA_INV02_20240820. 6:2 FTS and NEtFOSAA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of EISs $^{13}C_5$-PFPeA (668%), $^{13}C_4$-PFHpA (301%) and $^{13}C_3$-HFPO-DA (358%) were high in the analysis of sample E-A-BIOC_INV01_20240816. PFPeA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, 9Cl-PF3ONS, 11Cl-PF3OUdS, and 3:3 FTCA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.

7.1.14 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exception:

- Recoveries of NISs $^{13}C_3$-PFBA (38%), $^{13}C_2$-perfluorohexanoic acid (PFHxA [8%]), $^{13}C_4$-PFOA (14%), $^{13}C_5$--perfluorononanoic acid (PFNA [13%]), $^{13}C_2$- perfluorodecanoic acid (PFDA [25%]), $^{18}O_2$-PFHxS (25%), and $^{13}C_4$-PFOS (37%) were low in the analysis of sample E-T-BIOF_PLT01_20240910. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detected PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to extremely low $^{13}C_2$-PFHxA recovery. (R, ISL)
  - WSP UJ qualified the non-detect PFOA, PFNA, PFDA, PFUnA, PFDoDA, PFTrDA, PFTeDA, PFBS, PFPeS, PFHxS, 4:2 FTS, 6:2 FTS, and 8:2 FTS results due to low $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{18}O_2$-PFHxS recoveries. (UJ, ISL)
  - $^{13}C_3$-PFBA and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (6%), $^{13}C_4$-PFOA (21%), $^{13}C_5$-PFNA (15%), $^{13}C_2$-PFDA (28%), $^{18}O_2$-PFHxS (34%), and $^{13}C_4$-PFOS (20%) were low in the analysis of sample E-T-BIOI_PLT01_20240910. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detected PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to extremely low $^{13}C_2$-PFHxA- recovery. (R, ISL)
  - WSP UJ qualified the non-detect PFOA, PFNA, PFDA, PFUnA, PFDoDA, PFTrDA, PFTeDA, PFHpS, PFBS, PFOS, PFNS, PFDS, PFDoDS, PFOSA, NMeFOSA, NEtFOSA, NMeFOSAA, NEtFOSAA, NMeFOSE, and NEtFOSE results from the associated sample due to low $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{13}C_6$-PFOS recoveries. (UJ, ISL)
  - $^{18}O_2$-PFHxS recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (7%), $^{13}C_4$-PFOA (19%), $^{13}C_5$-PFNA (12%), $^{13}C_2$-PFDA (25%), $^{18}O_2$-PFHxS (25%), and $^{13}C_4$-PFOS (39%) were low in the analysis of sample E-T-BIOJ_PLT01_20240910. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detected PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to extremely low $^{13}C_2$-PFHxA recovery. (R, ISL)
  - WSP UJ qualified the non-detect and J qualified the detect PFOA, PFNA, PFDA, PFUnA, PFDoDA, PFTrDA, PFTeDA, PFBS, PFPeS, PFHxS, 4:2 FTS, 6:2 FTS, and 8:2 FTS results from the associated sample due to low $^{13}C_4$-PDFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{18}O_2$-PFHxS recoveries. (UJ/J, ISL)

- $^{13}C_4$-PFOS recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

– Recoveries of NISs $^{13}C_2$-PFHxA and $^{13}C_5$-PFNA were low at 7% and 47%, respectively, in the analysis of sample E-A-BIOC_INV01_20240816. Data limitations are summarized below.

  - WSP R qualified and rejected the non-detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to extremely low $^{13}C_2$-PFHxA recovery. (R, ISL)

  - $^{13}C_5$-PFNA recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

– Recoveries of NISs $^{13}C_2$-PFHxA (11%), $^{13}C_4$-PFOA (48%), $^{13}C_2$-PFDA (45%), and $^{13}C_4$-PFOS (42%) were low in the analysis of sample E-A-BIOJ_INV01_20240815. Data limitations are summarized below.

  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ/J, ISL)

  - $^{13}C_4$-PFOA, $^{13}C_2$-PFDA, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

– Recoveries of NISs $^{13}C_2$-PFHxA (22%), $^{13}C_4$-PFOA (46%), and $^{13}C_5$-PFNA (40%) were low in the analysis of sample E-T-BIOD_INV01_20240815. Data limitations are summarized below.

  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ/J, ISL)

  - $^{13}C_4$-PFOA and $^{13}C_5$-PFNA recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

– Recoveries of NISs $^{13}C_2$-PFHxA (21%), $^{13}C_4$-PFOA (41%), and $^{13}C_5$-PFNA (40%) were low in the standard analysis of sample E-T-BIOI_INV01_20240816. Data limitations are summarized below.

  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, Adona, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ/J, ISL)

  - $^{13}C_4$-PFOA and $^{13}C_5$-PFNA recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

– Recoveries of NIS $^{13}C_2$-PFHxA were low in the analysis of sample E-A-BIOB_INV01_20240817 (14%), E-T-BIOK_INV01_20240814 (29%), E-T-BIOH_INV01_20240817 (22%), E-T-BIOJ_INV02_20240816 (25%), E-A-BIOG_INV01_20240818 (24%), and E-T-BIOB_INV01_20240910 (25%). WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated samples due to low $^{13}C_2$-PFHxA recoveries. (UJ/J, ISL)

– Recovery of NIS $^{13}C_2$-PFHxA was low at 21% in the standard analysis of sample E-T-BIOG_INV01_20240817. Data limitations are summarized below.

  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, and PFEESA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ/J, ISL)

  - 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA were not reported from the associated analysis and data usability is not adversely affected by the low NIS recovery.

- Recoveries of NISs $^{13}C_2$-PFHxA (22%), $^{13}C_5$-PFNA (45%), and $^{13}C_4$-PFOS (45%) were low in the analysis of sample E-T-BIOP_INV01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ/J, ISL)
  - $^{13}C_5$-PFNA and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_3$-PFBA (48%), $^{13}C_2$-PFHxA (14%), $^{13}C_4$-PFOA (26%), $^{13}C_5$-PFNA (31%), $^{13}C_2$-PFDA (34%), $^{18}O_2$-PFHxS (30%), and $^{13}C_4$-PFOS (30%) were low in the analysis of sample E-T-BIOA_PLT01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, PFOA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA and $^{13}C_4$-PFOA recoveries. (UJ/J, ISL)
  - $^{13}C_3$-PFBA, $^{13}C_5$-PFNA, $^{18}O_2$-PFHxS, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (11%), $^{13}C_4$-PFOA (15%), $^{13}C_5$-PFNA (17%), $^{13}C_2$-PFDA (25%), $^{18}O_2$-PFHxS (26%), and $^{13}C_4$-PFOS (30%) were low in the analysis of sample E-T-BIOP_PLT01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnA, PFDoDA, PFTrDA, PFTeDA, PFBS, PFPeS, PFHxS, 4:2 FTS, 6:2 FTS, 8:2 FTS, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low NIS recoveries. (UJ/J, ISL)
  - $^{13}C_4$-PFOS recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (28%), $^{13}C_4$-PFOA (45%), $^{13}C_5$-PFNA (37%), $^{13}C_2$-PFDA (40%), $^{18}O_2$-PFHxS (39%), and $^{13}C_4$-PFOS (41%) were low in the analysis of sample E-T-BION_RNT01_20240813. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ, ISL)
  - $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, $^{18}O_2$-PFHxS, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (34%), $^{13}C_4$-PFOA (47%), $^{13}C_5$-PFNA (41%), $^{13}C_2$-PFDA (44%), $^{18}O_2$-PFHxS (26%), and $^{13}C_4$-PFOS (36%) were low in the standard analysis of sample E-T-BIOC_RNT01_20240911 Data limitations are summarized below.
  - WSP UJ qualified the non-detect and J qualified the detect PFBS, PFPeS, 4:2 FTS, 6:2 FTS, and 8:2 FTS results from the associated sample due to low $^{18}O_2$-PFHxS recovery. (UJ/J, ISL)
  - PFHxS was not reported from the associated analysis and data usability is not adversely affected by the low NIS recovery.
  - $^{13}C_2$-PFHxA, $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

- Recoveries of NISs $^{13}C_2$-PFHxA (28%), $^{13}C_4$-PFOA (44%), $^{13}C_5$-PFNA (35%), $^{13}C_2$-PFDA (43%), $^{18}O_2$-PFHxS (28%), and $^{13}C_4$-PFOS (47%) were low in the standard analysis of sample E-T-BIOC_RNT02_20240913. Data limitations are summarized below.
  - WSP UJ qualified the non-detect and J qualified the detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, PFBS, PFPeS, 4:2 FTS, 6:2 FTS, and 8:2 FTS results from the associated sample due to low $^{13}C_2$-PFHxA and $^{18}O_2$-PFHxS recoveries. (UJ/J, ISL)
  - PFHxS was not reported from the associated analysis and data usability is not adversely affected by the low NIS recovery.
  - $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (27%), $^{13}C_4$-PFOA (39%), $^{13}C_5$-PFNA (30%), $^{13}C_2$-PFDA (33%), $^{18}O_2$-PFHxS (32%), and $^{13}C_4$-PFOS (31%) were low in the analysis of sample E-T-BIOF_RNT01_20240912. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, PFMPA, PFMBA, NFDHA, 9Cl-PF3ONS, 11Cl-PF3OUdS, PFEESA, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA results from the associated sample due to low $^{13}C_2$-PFHxA recovery. (UJ, ISL)
  - $^{13}C_4$-PFOA, $^{13}C_5$-PFNA, $^{13}C_2$-PFDA, $^{18}O_2$-PFHxS, and $^{13}C_4$-PFOS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_4$-PFOA and $^{13}C_2$-PFDA were low at 48% and 38%, respectively, in the analysis of sample E-A-BIOR_PLT01_20240814. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recovery of NIS $^{13}C_4$-PFOA was low at 49% in the analysis of sample E-A-BIOT_PLT01_20240814. Recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA and $^{13}C_4$-PFOS were low at 47% and 42%, respectively, in the analysis of sample E-A-BIOK_INV02_20240818. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA and $^{13}C_5$-PFNA were low at 43% and 49%, respectively, in the analysis of sample E-T-BIOC_INV01_20240815. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (30%), $^{13}C_4$-PFOA (44%), $^{13}C_5$-PFNA (45%), and $^{13}C_4$-PFOS (41%) were low in the standard analysis of sample E-T-BIOJ_INV01_20240816. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NIS $^{13}C_2$-PFHxA were low in the analysis of samples E-T-BIOM_INV01_20240816 (44%), E-T-BION_INV01_20240814 (36%), E-T-BIOO_INV01_20240814 (39%), E-A-BIOL_INV01_20240815 (38%), E-A-BION_INV02_20240815 (45%), E-A-BIOCS_INV01_20240820 (46%), E-A-BIOE_INV01_20240819 (34%), E-A-BIOL_INV01_20240815 (34%), E-A-BIOPB_INV01_20240820 (47%), E-A-BIOB_FSH01_20240815 (40%), E-A-BIOC_FSH01_20240817 (40%), E-A-BIOCS_FSH01_20240819 (41%), E-A-BIOE_FSH01_20240819(41%), E-A-BIOA_FSH01_20240820 (41%), E-A-BIOF_FSH01_20240817 (48%), E-A-BIOG_FSH01_20240817 (47%), E-A-BIOH_FSH01_20240818 (46%), E-A-BIOPB_FSH01_20240820 (45%), and E-T-BIOD_RNT01_20240816 (41%). Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recovery of NIS $^{13}C_2$-PFHxA was low in the dilution analyses of samples E-T-BIOG_INV01_20240817 and E-T-BIOI_INV01_20240816 at 43% and 48%, respectively. Recoveries were greater than or equal to 30% and per

the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

- Recoveries of NISs $^{13}C_2$-PFHxA and $^{13}C_4$-PFOS were low at 39% and 48%, respectively, in the analysis of sample E-T-BIOH_INV02_20240817. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (39%), $^{13}C_4$-PFOA (39%), and $^{13}C_4$-PFOS (43%) were low in the analysis of sample E-A-BIOA_INV02_20240820. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recovery of NIS $^{13}C_4$-PFOS was low at 33% in the analysis of sample E-A-BIOK_FSH01_20240817. Recovery was greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (39%), $^{13}C_5$-PFNA (39%), $^{13}C_2$-PFDA (47%), and $^{13}C_4$-PFOS (38%) were low in the analysis of sample E-T-BIOF_INV01_20240910. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (31%), $^{13}C_4$-PFOA (43%), $^{13}C_5$-PFNA (39%), $^{13}C_2$-PFDA (40%), $^{18}O_2$-PFHxS (34%), and $^{13}C_4$-PFOS (47%) were low in the analysis of sample E-T-BIOI_RNT01_20240814. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (36%), $^{13}C_5$-PFNA (43%), $^{13}C_2$-PFDA (44%), and $^{18}O_2$-PFHxS (46%) were low in the analysis of sample E-T-BIOJ_RNT01_20240815. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (37%), $^{13}C_4$-PFOA (49%), and $^{13}C_5$-PFNA (42%) were low in the analysis of sample E-T-BIOK_RNT01_20240814. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (36%), $^{13}C_5$-PFNA (46%), and $^{13}C_2$-PFDA (47%) were low in the analysis of sample E-T-BIOL_RNT01_20240814. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (31%), $^{13}C_4$-PFOA (47%), $^{13}C_5$-PFNA (39%), $^{13}C_2$-PFDA (42%), and $^{18}O_2$-PFHxS (46%) were low in the analysis of sample E-T-BIOQ_RNT01_20240816. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (33%), $^{13}C_5$-PFNA (43%), $^{13}C_2$-PFDA (44%), $^{18}O_2$-PFHxS (40%), and $^{13}C_4$-PFOS (40%) were low in the analysis of sample E-T-BIOE_RNT01_20240911. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{13}C_2$-PFHxA (31%), $^{13}C_4$-PFOA (48%), $^{13}C_5$-PFNA (36%), $^{13}C_2$-PFDA (37%), $^{18}O_2$-PFHxS (39%), and $^{13}C_4$-PFOS (35%) were low in the analysis of sample E-T-BIOP_RNT01_20240911. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.
- Recoveries of NISs $^{18}O_2$-PFHxS and $^{13}C_4$-PFOS were low at 48% and 46%, respectively, in the dilution analysis of sample E-T-BIOC_RNT02_20240913. Recoveries were greater than or equal to 30% and per the DoD data validation guidelines, WSP did not qualify data based on NIS recoveries unless the recoveries were less than 30%.

7.1.15 ION RATIOS

Batelle I qualified data when ion transition ratios were outside the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV. WSP J qualified Batelle's I qualified results to indicate potential matrix interference or the presence of isomers in the sample with different ratios than present in the standard. (J, IAG)

7.1.16 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.17 DATA REPORTING AND ANALYTICAL PROCEDURES

Batelle J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Batelle's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP did not collect field duplicates with the samples reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 3,120 target analyte results from the field sample during this validation. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 64 records (2.0%) due to extremely low EIS, NIS, and/or MS recoveries.
- J+: WSP J+ qualified 28 records (0.90%) due to low EIS or high MS recoveries.
- J-: WSP J- qualified 26 records (0.83%) due to high EIS or low MS recoveries.
- J: WSP J qualified 225 records (7.2%) due to imprecision between primary and duplicate laboratory analyses or MS and MSD analyses, low NIS recoveries, detected concentrations less than the LOQ, and/or ion transition ratios out of limits
- UJ: WSP UJ qualified 260 records (8.3%) due to high CCV recoveries or low LCS, MS, EIS, and/or NIS recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft QPP Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

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TABLE(S)

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 Ecological Tissue Sampling Program

						Method Class		PFAS
						Analysis Method		E1633DR
						Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	Notes
24-0652	E-A-BIOO_PLT01	E-A-BIOO_PLT01_20240813	C6636-FS	8/13/2024	TP	N	40	
	E-A-BIOP_PLT01	E-A-BIOP_PLT01_20240813	C6637-FS	8/13/2024	TP	N	40	
	E-A-BIOP_PLT02	E-A-BIOP_PLT02_20240813	C6638-FS	8/13/2024	TP	N	40	
	E-A-BIOR_PLT01	E-A-BIOR_PLT01_20240814	C6639-FS	8/14/2024	TP	N	40	
	E-A-BIOT_PLT01	E-A-BIOT_PLT01_20240814	C6640-FS	8/14/2024	TP	N	40	MS/MSD, Lab Duplicate
	E-A-BIOU_PLT01	E-A-BIOU_PLT01_20240814	C6641-FS	8/14/2024	TP	N	40	
	E-A-BIOY_PLT01	E-A-BIOY_PLT01_20240813	C6643-FS	8/13/2024	TP	N	40	
24-0698	E-T-BIOC_INV01	E-T-BIOC_INV01_20240815	C6977-FS	8/15/2024	TA	N	40	
	E-T-BIOC_INV02	E-T-BIOC_INV02_20240815	C6978-FS	8/15/2024	TA	N	40	MS/MSD, Lab Duplicate
	E-T-BIOD_INV01	E-T-BIOD_INV01_20240815	C6979-FS	8/15/2024	TA	N	40	
	E-T-BIOD_INV02	E-T-BIOD_INV02_20240815	C6980-FS	8/15/2024	TA	N	40	
	E-T-BIOE_INV01	E-T-BIOE_INV01_20240818	C6989-FS	8/18/2024	TA	N	40	Lab Duplicate
	E-T-BIOE_INV02	E-T-BIOE_INV02_20240819	C6990-FS	8/19/2024	TA	N	40	
	E-T-BIOG_INV01	E-T-BIOG_INV01_20240817	C6991-FS	8/17/2024	TA	N	40	
	E-T-BIOH_INV01	E-T-BIOH_INV01_20240817	C6992-FS	8/17/2024	TA	N	40	
	E-T-BIOH_INV02	E-T-BIOH_INV02_20240817	C6993-FS	8/17/2024	TA	N	40	
	E-T-BIOI_INV01	E-T-BIOI_INV01_20240816	C6981-FS	8/16/2024	TA	N	40	
	E-T-BIOI_INV02	E-T-BIOI_INV02_20240816	C6982-FS	8/16/2024	TA	N	40	
	E-T-BIOJ_INV01	E-T-BIOJ_INV01_20240816	C6983-FS	8/16/2024	TA	N	40	
	E-T-BIOJ_INV02	E-T-BIOJ_INV02_20240816	C6994-FS	8/16/2024	TA	N	40	
	E-T-BIOK_INV01	E-T-BIOK_INV01_20240814	C6984-FS	8/14/2024	TA	N	40	MS/MSD, Lab Duplicate
	E-T-BIOL_INV01	E-T-BIOL_INV01_20240819	C6995-FS	8/19/2024	TA	N	40	
	E-T-BIOM_INV01	E-T-BIOM_INV01_20240816	C6985-FS	8/16/2024	TA	N	40	
	E-T-BION_INV01	E-T-BION_INV01_20240814	C6986-FS	8/14/2024	TA	N	40	
	E-T-BIOO_INV01	E-T-BIOO_INV01_20240814	C6987-FS	8/14/2024	TA	N	40	
	E-T-BIOQ_INV01	E-T-BIOQ_INV01_20240816	C6988-FS	8/16/2024	TA	N	40	
24-0699	E-A-BIOA_INV01	E-A-BIOA_INV01_20240820	C7015-FS	8/20/2024	TA	N	40	
	E-A-BIOA_INV02	E-A-BIOA_INV02_20240820	C7016-FS	8/20/2024	TA	N	40	
	E-A-BIOB_INV01	E-A-BIOB_INV01_20240817	C7003-FS	8/17/2024	TA	N	40	
	E-A-BIOCS_INV01	E-A-BIOCS_INV01_20240820	C7017-FS	8/20/2024	TA	N	40	
	E-A-BIOD_INV01	E-A-BIOD_INV01_20240817	C7005-FS	8/17/2024	TA	N	40	
	E-A-BIOE_INV01	E-A-BIOE_INV01_20240819	C7018-FS	8/19/2024	TA	N	40	
	E-A-BIOF_INV01	E-A-BIOF_INV01_20240819	C7019-FS	8/19/2024	TA	N	40	
	E-A-BIOG_INV01	E-A-BIOG_INV01_20240818	C7006-FS	8/18/2024	TA	N	40	
	E-A-BIOH_INV01	E-A-BIOH_INV01_20240819	C7007-FS	8/19/2024	TA	N	40	Lab Duplicate
	E-A-BIOI_INV01	E-A-BIOI_INV01_20240817	C7008-FS	8/17/2024	TA	N	40	
	E-A-BIOJ_INV01	E-A-BIOJ_INV01_20240815	C7009-FS	8/15/2024	TA	N	40	
	E-A-BIOK_INV01	E-A-BIOK_INV01_20240816	C7010-FS	8/16/2024	TA	N	40	
	E-A-BIOK_INV02	E-A-BIOK_INV02_20240818	C7011-FS	8/18/2024	TA	N	40	
	E-A-BIOL_INV01	E-A-BIOL_INV01_20240815	C7012-FS	8/15/2024	TA	N	40	Lab Duplicate
	E-A-BION_INV01	E-A-BION_INV01_20240815	C7013-FS	8/15/2024	TA	N	40	
	E-A-BION_INV02	E-A-BION_INV02_20240815	C7014-FS	8/15/2024	TA	N	40	
	E-A-BIOPB_INV01	E-A-BIOPB_INV01_20240820	C7020-FS	8/20/2024	TA	N	40	

Prepared by:AKN
Date:2/24/25
Checked by: MDS
Date: 2/25/2025

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 Ecological Tissue Sampling Program

						Method Class		PFAS
						Analysis Method		E1633DR
						Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	Notes
24-0700	E-A-BIOA_FSH01	E-A-BIOA_FSH01_20240820	C7033-FS	8/20/2024	TA	N	40	
	E-A-BIOB_FSH01	E-A-BIOB_FSH01_20240815	C7021-FS	8/15/2024	TA	N	40	
	E-A-BIOC_FSH01	E-A-BIOC_FSH01_20240817	C7022-FS	8/17/2024	TA	N	40	
	E-A-BIOCS_FSH01	E-A-BIOCS_FSH01_20240819	C7023-FS	8/19/2024	TA	N	40	
	E-A-BIOD_FSH01	E-A-BIOD_FSH01_20240817	C7024-FS	8/17/2024	TA	N	40	
	E-A-BIOE_FSH01	E-A-BIOE_FSH01_20240819	C7025-FS	8/19/2024	TA	N	40	
	E-A-BIOF_FSH01	E-A-BIOF_FSH01_20240817	C7026-FS	8/17/2024	TA	N	40	Lab Duplicate
	E-A-BIOG_FSH01	E-A-BIOG_FSH01_20240817	C7027-FS	8/17/2024	TA	N	40	
	E-A-BIOH_FSH01	E-A-BIOH_FSH01_20240818	C7028-FS	8/18/2024	TA	N	40	
	E-A-BIOI_FSH01	E-A-BIOI_FSH01_20240817	C7029-FS	8/17/2024	TA	N	40	
	E-A-BIOJ_FSH01	E-A-BIOJ_FSH01_20240815	C7030-FS	8/15/2024	TA	N	40	Lab Duplicate
	E-A-BIOK_FSH01	E-A-BIOK_FSH01_20240817	C7031-FS	8/17/2024	TA	N	40	
	E-A-BIOPB_FSH01	E-A-BIOPB_FSH01_20240820	C7032-FS	8/20/2024	TA	N	40	
24-0783	E-T-BIOA_INV01	E-T-BIOA_INV01_20240910	C7940-FS	9/10/2024	TA	N	40	
	E-T-BIOB_INV01	E-T-BIOB_INV01_20240910	C7941-FS	9/10/2024	TA	N	40	
	E-T-BIOF_INV01	E-T-BIOF_INV01_20240910	C7945-FS	9/10/2024	TA	N	40	
	E-T-BIOP_INV01	E-T-BIOP_INV01_20240910	C7950-FS	9/10/2024	TA	N	40	
24-0784	E-T-BIOA_PLT01	E-T-BIOA_PLT01_20240910	C7953-FS	9/10/2024	TP	N	40	
	E-T-BIOF_PLT01	E-T-BIOF_PLT01_20240910	C7954-FS	9/10/2024	TP	N	40	
	E-T-BIOI_PLT01	E-T-BIOI_PLT01_20240910	C7955-FS	9/10/2024	TP	N	40	
	E-T-BIOJ_PLT01	E-T-BIOJ_PLT01_20240910	C7956-FS	9/10/2024	TP	N	40	
	E-T-BIOP_PLT01	E-T-BIOP_PLT01_20240910	C7957-FS	9/10/2024	TP	N	40	
24-0885	E-A-BIOC_INV01	E-A-BIOC_INV01_20240816	C7004-FS	8/16/2024	TA	N	40	
	E-T-BIOC_RNT01	E-T-BIOC_RNT01_20240911	C7942-FS	9/11/2024	TA	N	40	
	E-T-BIOC_RNT02	E-T-BIOC_RNT02_20240913	C7943-FS	9/13/2024	TA	N	40	
	E-T-BIOD_RNT01	E-T-BIOD_RNT01_20240816	C6996-FS	8/16/2024	TA	N	40	
	E-T-BIOE_RNT01	E-T-BIOE_RNT01_20240911	C7944-FS	9/11/2024	TA	N	40	
	E-T-BIOF_RNT01	E-T-BIOF_RNT01_20240912	C7946-FS	9/12/2024	TA	N	40	MS/MSD, Lab Duplicate
	E-T-BIOI_RNT01	E-T-BIOI_RNT01_20240814	C6997-FS	8/14/2024	TA	N	40	Lab Duplicate
	E-T-BIOJ_RNT01	E-T-BIOJ_RNT01_20240815	C6998-FS	8/15/2024	TA	N	40	
	E-T-BIOK_RNT01	E-T-BIOK_RNT01_20240814	C6999-FS	8/14/2024	TA	N	40	
	E-T-BIOL_RNT01	E-T-BIOL_RNT01_20240814	C7000-FS	8/14/2024	TA	N	40	MS/MSD, Lab Duplicate
	E-T-BION_RNT01	E-T-BION_RNT01_20240813	C7001-FS	8/13/2024	TA	N	40	
	E-T-BIOP_RNT01	E-T-BIOP_RNT01_20240911	C7951-FS	9/11/2024	TA	N	40	
	E-T-BIOQ_RNT01	E-T-BIOQ_RNT01_20240816	C7002-FS	8/16/2024	TA	N	40	

Notes:
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate
TA = Animal Tissue; TP = Plant Tissue
ParamCount = Number of target analytes reported

Prepared by:AKN
Date:2/24/25
Checked by: MDS
Date: 2/25/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0652							24-0698			
			Location	E-A-BIOO_PLT01	E-A-BIOP_PLT01	E-A-BIOP_PLT02	E-A-BIOR_PLT01	E-A-BIOT_PLT01	E-A-BIOU_PLT01	E-A-BIOY_PLT01	E-T-BIOC_INV01	E-T-BIOC_INV02	E-T-BIOD_INV01	E-T-BIOD_INV02
			Sample Date	8/13/2024	8/13/2024	8/13/2024	8/14/2024	8/14/2024	8/14/2024	8/13/2024	8/15/2024	8/15/2024	8/15/2024	8/15/2024
			Sample ID	E-A-BIOO_PLT01_20240813	E-A-BIOP_PLT01_20240813	E-A-BIOP_PLT02_20240813	E-A-BIOR_PLT01_20240814	E-A-BIOT_PLT01_20240814	E-A-BIOU_PLT01_20240814	E-A-BIOY_PLT01_20240813	E-T-BIOC_INV01_20240815	E-T-BIOC_INV02_20240815	E-T-BIOD_INV01_20240815	E-T-BIOD_INV02_20240815
			QC Code	N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	1 U	0.848 U	0.889 U	0.305 J	0.734 J	0.842 U	0.875 U	121	16.6 J	7.57 J	19.6
		Perfluoropentanoic acid (PFPeA)	NG/G	0.964 U	4.8	0.857 U	0.584 U	0.505 U	2.91	1.1 J	328	29.6	9.43 J-	22.3
		Perfluorohexanoic acid (PFHxA)	NG/G	0.661 U	0.561 U	0.587 U	0.4 U	0.346 U	0.556 U	0.578 U	280	18.9	15 J	7.41
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.625 U	0.53 U	0.556 U	0.378 U	0.327 U	0.526 U	0.547 U	121 J+	4.38 UJ	2.33 UJ	8.49 J+
		Perfluorooctanoic acid (PFOA)	NG/G	0.961	0.379 U	0.397 U	0.27 U	0.234 U	0.376 U	0.954	114	8.32 J	9.04	7.05
		Perfluorononanoic acid (PFNA)	NG/G	0.867	0.545 U	0.341 J	0.389 U	0.336 U	0.541 U	0.318 J	50.8	4.66 J	7.33	3.83
		Perfluorodecanoic acid (PFDA)	NG/G	0.696 U	0.591 U	0.619 U	0.422 U	0.364 U	0.586 U	0.609 U	48	4.88 U	3.18	1.51
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.536 U	0.455 U	0.476 U	0.324 U	0.28 U	0.451 U	0.469 U	245	4.61 J	8.8	3.77
		Perfluorododecanoic acid (PFDoA)	NG/G	0.429 U	0.364 U	0.381 U	0.259 U	0.224 U	0.361 U	0.375 U	104	1.93 J	5.03	2.07
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.696 U	0.591 U	0.619 U	0.422 U	0.364 U	0.586 U	0.609 U	88.7	5.26 J+	24.9	8.84 J+
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.554 U	0.47 U	0.492 U	0.335 U	0.29 U	0.466 U	0.484 U	44.5	3.88 UJ	5.81	2.04 J+
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.607 U	0.515 U	0.54 U	0.368 U	0.318 U	0.511 U	0.531 U	114	10.9	6.41	0.34 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.357 U	0.303 U	0.317 U	0.216 U	0.187 U	0.301 U	0.313 U	1.48 U	7.68	1.33 U	0.2 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.756	0.441 J	0.548 J	0.449	0.268 J	0.451 U	0.293 J	2510	493 J	139	34.9
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.625 U	0.53 U	0.556 U	0.378 U	0.327 U	0.526 U	0.547 U	93.1	5.38	5.59	1.78
		Perfluorooctanesulfonic acid (PFOS)	NG/G	33.5	1.61	8.5	9.43	0.374	0.586 U	10.8	9210	431 J	381	390
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.705 U	0.598 U	0.627 U	0.427 U	0.369 U	0.594 U	0.617 U	264	3.33 J	2.63 U	2.04
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.589 U	0.5 U	0.524 U	0.357 U	0.308 U	0.496 U	0.516 U	617	4.44 J	2.2 U	1.36
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.339 U	0.288 U	0.302 U	0.205 U	0.178 U	0.286 U	0.297 U	689	3.43 J	1.27 U	0.915
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	2.36 U	2 U	2.1 U	1.43 U	1.23 U	1.98 U	2.06 U	9.78 U	16.5 U	8.8 U	1.32 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	1.45 U	1.23 U	1.29 U	0.876 U	0.757 U	1.22 U	1.27 U	54.1	10.1 U	5.4 U	0.81 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	1.43 U	1.21 U	1.27 U	0.865 U	0.748 U	1.2 U	1.25 U	676	25.7	5.33 U	4.85
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.286 U	0.242 U	0.254 U	0.173 U	0.15 U	0.241 U	0.25 U	213	39.2 J	1.66 J	0.741
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.179 U	0.152 U	0.159 U	0.108 U	0.0935 U	0.15 U	0.156 U	4.65	1.25 U	0.667 U	0.1 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.607 U	0.515 U	0.54 U	0.368 U	0.318 U	0.511 U	0.531 U	4.27	2.84 J	2.13 J	0.437
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.661 U	0.561 U	0.587 U	0.4 U	0.346 U	0.556 U	0.578 U	2.74 U	4.63 U	2.47 U	0.37 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.679 U	0.576 U	0.603 U	0.411 U	0.355 U	0.571 U	0.594 U	2.81 U	4.75 U	2.53 U	0.38 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	3.41 U	2.89 U	3.03 U	2.06 U	1.79 U	2.87 U	2.98 U	14.1 U	23.9 U	12.7 U	1.91 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	3.57 U	3.03 U	3.17 U	2.16 U	1.87 U	3.01 U	3.13 U	14.8 U	25 U	13.3 U	2 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	2.07 U	1.76 U	1.84 U	1.25 U	1.08 U	1.74 U	1.81 U	8.59 U	14.5 U	7.73 UJ	1.16 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	1.61 U	1.36 U	1.43 U	0.973 U	0.841 U	1.35 U	1.41 U	6.67 U	11.3 U	6 UJ	0.9 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	1.23 U	1.05 U	1.1 U	0.746 U	0.645 U	1.04 U	1.08 U	5.11 U	8.63 U	4.6 UJ	0.69 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.964 U	0.818 U	0.857 U	0.584 U	0.505 UJ	0.812 U	0.844 U	4 U	6.75 U	3.6 UJ	0.54 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.375 U	0.318 U	0.333 U	0.227 U	0.196 U	0.316 U	0.328 U	1.56 U	2.63 U	1.4 UJ	0.21 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	2.23 U	1.89 U	1.98 U	1.35 U	1.17 U	1.88 U	1.95 U	9.26 U	15.6 U	8.33 UJ	1.25 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	2.13 U	1.8 U	1.89 U	1.29 U	1.11 U	1.79 U	1.86 U	8.81 U	14.9 U	7.93 UJ	1.19 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.625 U	0.53 U	0.556 U	0.378 U	0.327 U	0.526 U	0.547 U	2.59 U	4.38 U	2.33 UJ	0.35 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.875 U	0.742 U	0.778 U	0.53 U	0.458 U	0.737 U	0.766 U	778	11 J	3.27 UJ	7.44
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	12.2 U	10.4 U	10.9 U	7.39 U	6.39 U	10.3 U	10.7 U	5850	144 J+	108 J	24
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	6.61 U	5.61 U	5.87 U	4 U	3.46 U	5.56 U	5.78 U	5390	164 J	83.4 J	36.9

Prepared by: AKN
Date: 2/25/25
Checked by: MLB
Date:2/25/2025

Table 2 – Summary of Analytical Results
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2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0698																			
			Location	E-T-BIOE_INV01		E-T-BIOE_INV02		E-T-BIOG_INV01		E-T-BIOH_INV01		E-T-BIOH_INV02		E-T-BIOI_INV01		E-T-BIOI_INV02		E-T-BIOJ_INV01		E-T-BIOJ_INV02		E-T-BIOK_INV01		E-T-BIOL_INV01	
			Sample Date	8/18/2024		8/19/2024		8/17/2024		8/17/2024		8/17/2024		8/16/2024		8/16/2024		8/16/2024		8/16/2024		8/14/2024		8/19/2024	
			Sample ID	E-T-BIOE_INV01_20240818		E-T-BIOE_INV02_20240819		E-T-BIOG_INV01_20240817		E-T-BIOH_INV01_20240817		E-T-BIOH_INV02_20240817		E-T-BIOI_INV01_20240816		E-T-BIOI_INV02_20240816		E-T-BIOJ_INV01_20240816		E-T-BIOJ_INV02_20240816		E-T-BIOK_INV01_20240814		E-T-BIOL_INV01_20240819	
			QC Code	N		N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	7.47	U	5.89	U	237		81.3		314		0.628	J	0.875	U	124		96.2		14.8		4.87	U
		Perfluoropentanoic acid (PFPeA)	NG/G	7.2	U	5.68	U	698	J-	151	J-	673	J-	1.24	J	0.505	J	246		453	J-	42.3	J-	4.7	U
		Perfluorohexanoic acid (PFHxA)	NG/G	4.93	U	3.89	U	364	J	95	J	189		0.37	UJ	0.578	U	56.3		179	J	57.7	J	3.22	U
		Perfluoroheptanoic acid (PFHpA)	NG/G	4.67	UJ	3.68	U	238	J+	27.8	J	172	J+	0.35	UJ	0.547	UJ	49.7	J+	148	J+	2.92	UJ	3.04	UJ
		Perfluorooctanoic acid (PFOA)	NG/G	3.33	U	2.63	U	179		36.8		203		2.04		1.31		39.9		188		41.5		2.87	J
		Perfluorononanoic acid (PFNA)	NG/G	3.07	J	3.79	U	63		24.2		124		1.61		0.346	J	23.6		117		6.56		1.64	J
		Perfluorodecanoic acid (PFDA)	NG/G	5.2	U	4.11	U	41.1		14.1		55.5		1.2		0.609	U	17		20.3		4.93		3.39	U
		Perfluoroundecanoic acid (PFUnA)	NG/G	4	U	2.09	J	191		45.3		139		2.43		0.43	J	18.8		63.7		13.6		5.03	
		Perfluorododecanoic acid (PFDoA)	NG/G	3.2	U	1.76	J	182		29.9		25.8		1.77		0.23	J	7.7		59.3		24.2	J-	4.87	
		Perfluorotridecanoic acid (PFTrDA)	NG/G	5.2	UJ	4.11	U	218	J+	61.9	J+	67.6	J+	6.57		0.821		38.5		74.3	J+	49.5	J	19.4	J+
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	4.13	UJ	3.26	U	103	J+	13	J+	16.9	J+	2.28		0.484	U	18.1		57.5	J+	30.4	J	5.9	J+
		Perfluorobutanesulfonic acid (PFBS)	NG/G	4.53	U	3.58	U	24.7		6.12		12.9		2.45		0.531	U	46.7		305		9.86		2.96	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	2.67	U	2.11	U	1.29	U	1.33	U	1.33	U	0.2	U	0.313	U	1.38	U	1.54	U	0	R	1.74	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	22.9		4.52		3980		1590		1310		40.1		3.43		2910		11000		1450	J	20.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	2.31	J	3.68	U	151		82.5		161		1.6		0.547	U	221		481		38.3	J	3.04	U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	327	J	154		10600		10100		12400		184		23.9		38000		17700		6910		40.3	
		Perfluorononanesulfonic acid (PFNS)	NG/G	5.27	U	4.16	U	255		139		304		0.521		0.617	U	372		145		19.4		3.43	U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	2.27	J	3.47	U	935		102		187		0.439		0.267	J	21.8		165		23.4		2.87	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	2.53	U	2	U	1200		46.9		59.9		0.19	U	0.297	U	41.3		154		4.94	J-	1.65	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	17.6	U	13.9	U	8.52	U	8.8	UJ	8.8	U	1.32	U	2.06	U	9.1	U	10.2	U	11	U	11.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	10.8	U	8.53	U	1260	J-	13.2		34		0.81	U	1.27	U	1240		234		6.75	U	7.04	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	11.3	J	5.68	J	4080		65.1		63.8		0.8	U	1.25	U	1030		906		6.38	J	6.96	U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	2.13	U	11.6		1870		261		19.6	J-	1.25		1.35		52.6	J-	204		49.5		6.91	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	1.33	U	1.95	J	53.5		0.667	U	0.667	U	0.572		0.156	U	0.69	U	0.769	U	0.833	U	0.87	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	4.53	U	6.18		25.4		2.09	J	2.27	U	1.48		0.531	U	2.34	U	2.62	U	2.35	J	6.61	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	4.93	U	3.89	U	125		2.47	U	2.47	U	0.37	U	0.578	U	2.55	U	60.3		3.08	U	3.22	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	5.07	U	4	U	7.4		2.53	U	2.53	U	0.38	U	0.594	U	2.62	U	35.3		3.17	U	3.3	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	25.5	U	20.1	U	34.2		12.7	U	12.7	U	1.91	U	2.98	U	13.2	U	14.7	U	15.9	U	16.6	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	26.7	U	29.3	J	74.4		13.3	U	13.3	U	3.93	J	3.13	U	13.8	U	8.82	J	16.7	U	20	J
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	15.5	U	12.2	U	7.48	UJ	7.73	UJ	7.73	U	1.16	UJ	1.81	U	8	U	8.92	UJ	9.67	UJ	10.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	12	U	9.47	U	5.81	UJ	6	UJ	6	U	0.9	UJ	1.41	U	6.21	U	6.92	UJ	7.5	UJ	7.83	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	9.2	U	7.26	U	4.45	UJ	4.6	UJ	4.6	U	0.69	UJ	1.08	U	4.76	U	5.31	UJ	5.75	UJ	6	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	7.2	U	5.68	U	3.48	UJ	3.6	UJ	3.6	U	0.54	UJ	0.844	U	3.72	U	4.15	UJ	4.5	UJ	4.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	2.8	U	2.21	U	1.35	UJ	1.4	UJ	1.4	U	0.21	UJ	0.328	U	1.45	U	1.62	UJ	1.75	UJ	1.83	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	16.7	U	13.2	U	8.06	UJ	8.33	UJ	8.33	U	1.25	UJ	1.95	U	8.62	U	9.62	UJ	10.4	UJ	10.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	15.9	U	12.5	U	7.68	UJ	7.93	UJ	7.93	U	1.19	UJ	1.86	U	8.21	U	9.15	UJ	9.92	UJ	10.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	4.67	U	3.68	U	2.26	UJ	2.33	UJ	2.33	U	0.35	UJ	0.547	U	2.41	U	2.69	UJ	2.92	UJ	3.04	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	6.53	U	5.16	U	7950		537	J-	297	J-	0.49	UJ	0.675	J	2900		2190	J-	12	J	8.26	J
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	71	J	72	U	191000		8050	J	2020		10.6	J	10.7	U	31000		34300	J	170	J+	62.9	J
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	73.2	J	45.2	J	149000		11800	J	7940		11.8	J	7.88	J	7820		29100	J	345	J+	29.2	J

Prepared by: AKN
Date: 2/25/25
Checked by: MLB
Date:2/25/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

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2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0700																					
			Location	E-A-BIOB_FSH01		E-A-BIOC_FSH01		E-A-BIOCS_FSH01		E-A-BIOD_FSH01		E-A-BIOE_FSH01		E-A-BIOF_FSH01		E-A-BIOG_FSH01		E-A-BIOH_FSH01		E-A-BIOI_FSH01		E-A-BIOJ_FSH01		E-A-BIOK_FSH01		E-A-BIOPB_FSH01	
			Sample Date	8/15/2024		8/17/2024		8/19/2024		8/17/2024		8/19/2024		8/17/2024		8/17/2024		8/18/2024		8/17/2024		8/15/2024		8/17/2024		8/20/2024	
			Sample ID	E-A-BIOB_FSH01_20240815		E-A-BIOC_FSH01_20240817		E-A-BIOCS_FSH01_20240819		E-A-BIOD_FSH01_20240817		E-A-BIOE_FSH01_20240819		E-A-BIOF_FSH01_20240817		E-A-BIOG_FSH01_20240817		E-A-BIOH_FSH01_20240818		E-A-BIOI_FSH01_20240817		E-A-BIOJ_FSH01_20240815		E-A-BIOK_FSH01_20240817		E-A-BIOPB_FSH01_20240820	
			QC Code	N		N		N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	2.43	U	2.8	U	2.43	U	2.8	U	2.43	U	2.33	U	2.67	U	2.29	U	2.73	U	2.73	U	2.87	U	2.29	U
		Perfluoropentanoic acid (PFPeA)	NG/G	2.35	U	2.7	U	2.35	U	2.7	U	2.35	U	2.25	U	2.57	U	2.2	U	2.63	U	2.63	U	2.77	U	2.2	U
		Perfluorohexanoic acid (PFHxA)	NG/G	1.61	U	1.85	U	1.61	U	1.85	U	1.61	U	1.54	U	1.76	U	1.51	U	1.8	U	1.8	U	1.9	U	1.51	U
		Perfluoroheptanoic acid (PFHpA)	NG/G	1.52	U	1.75	U	1.52	U	1.75	U	1.52	U	1.46	U	1.67	U	1.43	U	1.71	U	1.71	U	1.79	U	1.43	U
		Perfluorooctanoic acid (PFOA)	NG/G	1.09	U	1.25	U	1.09	U	1.25	U	1.09	U	0.638	J	1.19	U	1.02	U	1.22	U	1.22	U	0.997	J	1.02	U
		Perfluorononanoic acid (PFNA)	NG/G	0.798	J	1.18	J	1.22	J	1.8	U	1.57	U	1.6	J	1.97		1.64		1.76	U	1.76	U	1.85	U	1.47	U
		Perfluorodecanoic acid (PFDA)	NG/G	1.76		2.74		1.65	J	1.95	U	2.55		4.13		6.88		3.53		1.9	U	1.9	U	6.27		1.38	J
		Perfluoroundecanoic acid (PFUnA)	NG/G	2.13		1.5	U	2.85		1.5	U	4.42		6.11		6.95		5.08		1.46	U	1.46	U	1.54	U	1.22	U
		Perfluorododecanoic acid (PFDoA)	NG/G	1.04	U	1.2	U	1.23	J	1.2	U	1.12	J	1.72		1.38	J	1.42	J	1.17	U	1.17	U	1.92	J	0.498	J
		Perfluorotridecanoic acid (PFTrDA)	NG/G	1.01	J	1.48	J	4.73		1.95	U	3.74		5.95		3.21		4.14		1.9	U	1.9	U	1.16	J	0.99	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	1.35	U	1.55	U	1.09	J	1.55	U	1.35	U	1.23	J	1.48	U	0.961	J	1.51	U	1.51	U	1.59	U	1.27	U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	1.48	U	1.7	U	1.48	U	1.7	U	1.48	U	1.42	U	1.62	U	1.39	U	1.66	U	1.66	U	3.05		1.39	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.87	U	1	U	0.87	U	1	U	0.87	U	0.833	U	0.952	U	0.816	U	0.976	U	0.976	U	18.9		0.816	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.887	J	1.5	U	1.3	U	1.5	U	2.71		5.31		1.52	J	2.2		1.46	U	1.46	U	191		1.22	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	1.52	U	1.75	U	1.52	U	1.75	U	1.52	U	1.46	U	1.67	U	1.43	U	1.71	U	1.71	U	69.3		1.43	U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	125		66.1		17.9		25.9		408		466		712		311		3.43		8.97		3580		5.9	
		Perfluorononanesulfonic acid (PFNS)	NG/G	1.72	U	1.98	U	1.72	U	1.98	U	0.922	J	1.65	U	1.08	J	1.61	U	1.93	U	1.93	U	25		1.61	U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	1.43	U	1.65	U	1.43	U	1.65	U	1.43	U	1.38	U	1.57	U	1.35	U	1.61	U	1.61	U	18.3		1.35	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.826	U	0.95	U	0.826	U	0.95	U	0.826	U	0.792	U	0.905	U	0.776	U	0.927	U	0.927	U	4.15		0.776	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	5.74	U	6.6	U	5.74	U	6.6	U	5.74	U	5.5	U	6.29	U	5.39	U	6.44	U	6.44	U	6.77	U	5.39	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	3.52	U	4.05	U	3.52	U	4.05	U	3.52	U	3.38	U	3.86	U	3.31	U	3.95	U	3.95	U	4.15	U	3.31	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	3.48	U	4	U	3.48	U	4	U	3.48	U	3.33	U	3.81	U	3.27	U	3.9	U	3.9	U	134		3.27	U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.696	U	0.8	U	0.696	U	0.8	U	0.696	U	0.519	J	0.762	U	0.467	J	0.78	U	0.78	U	47.5	J-	0.653	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.435	U	0.5	U	0.435	U	0.5	U	0.435	U	0.417	U	0.476	U	0.408	U	0.488	U	0.488	U	0.513	U	0.408	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	1.48	U	1.7	U	1.48	U	1.7	U	1.48	U	1.42	U	1.62	U	1.39	U	1.66	U	1.66	U	1.74	U	1.39	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	1.61	U	1.85	U	1.61	U	1.85	U	1.61	U	1.54	U	1.76	U	1.51	U	1.8	U	1.8	U	1.9	U	1.51	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	1.65	U	1.9	U	1.65	U	1.9	U	1.65	U	1.58	U	1.81	U	1.55	U	1.85	U	1.85	U	1.17	J	1.55	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	8.3	U	9.55	U	8.3	U	9.55	U	8.3	U	7.96	U	9.1	U	7.8	U	9.32	U	9.32	U	9.79	U	7.8	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	8.7	U	10	U	8.7	U	10	U	8.7	U	8.33	U	9.52	U	8.16	U	9.76	U	9.76	UJ	10.3	U	0	R
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	5.04	U	5.8	U	5.04	U	5.8	U	5.04	U	4.83	U	5.52	U	4.73	U	5.66	U	5.66	U	5.95	U	4.73	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	3.91	U	4.5	U	3.91	U	4.5	U	3.91	U	3.75	U	4.29	U	3.67	U	4.39	U	4.39	U	4.62	U	3.67	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	3	U	3.45	U	3	U	3.45	U	3	U	2.88	U	3.29	U	2.82	U	3.37	U	3.37	U	3.54	U	2.82	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	2.35	U	2.7	U	2.35	U	2.7	U	2.35	U	2.25	U	2.57	U	2.2	U	2.63	U	2.63	U	2.77	U	3.63	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.913	U	1.05	U	0.913	U	1.05	U	0.913	U	0.875	U	1	U	0.857	U	1.02	U	1.02	U	1.08	U	0.857	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	5.43	U	6.25	U	5.43	U	6.25	U	5.43	U	5.21	U	5.95	U	5.1	U	6.1	U	6.1	U	6.41	U	5.1	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	5.17	U	5.95	U	5.17	U	5.95	U	5.17	U	4.96	U	5.67	U	4.86	U	5.8	U	5.8	U	6.1	U	4.86	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	1.52	U	1.75	U	1.52	U	1.75	U	1.52	U	1.46	U	1.67	U	1.43	U	1.71	U	1.71	U	1.79	U	1.43	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	2.13	U	2.45	U	2.13	U	2.45	U	2.13	U	2.04	U	2.33	U	2	U	2.39	U	2.39	U	2.51	U	2	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	29.7	U	34.2	U	29.7	U	34.2	U	29.7	U	28.5	U	32.6	U	27.9	U	33.4	U	33.4	U	35.1	U	27.9	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	16.1	U	18.5	U	16.1	U	18.5	U	16.1	U	15.4	U	17.6	U	15.1	U	18	U	18	U	65.2		15.1	U

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Date:2/25/2025

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Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

			SDG	24-0783						24-0784										24-0885	
			Location	E-T-BIOA_INV01		E-T-BIOB_INV01		E-T-BIOF_INV01		E-T-BIOP_INV01		E-T-BIOA_PLT01		E-T-BIOF_PLT01		E-T-BIOI_PLT01		E-T-BIOJ_PLT01		E-T-BIOP_PLT01		E-A-BIOC_INV01		E-T-BIOC_RNT01	
			Sample Date	9/10/2024		9/10/2024		9/10/2024		9/10/2024		9/10/2024		9/10/2024		9/10/2024		9/10/2024		9/10/2024		8/16/2024		9/11/2024	
			Sample ID	E-T-BIOA_INV01_20240910		E-T-BIOB_INV01_20240910		E-T-BIOF_INV01_20240910		E-T-BIOP_INV01_20240910		E-T-BIOA_PLT01_20240910		E-T-BIOF_PLT01_20240910		E-T-BIOI_PLT01_20240910		E-T-BIOJ_PLT01_20240910		E-T-BIOP_PLT01_20240910		E-A-BIOC_INV01_20240816		E-T-BIOC_RNT01_20240911	
			QC Code	N		N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	3.61	U	2.35		3.44		1.22	J	1.11	J+	1.45		1.57	J+	2.64		1.55	J+	0.842	U	15.7	
		Perfluoropentanoic acid (PFPeA)	NG/G	3.48	U	0.751	J	0.879		0.893	J	11.6	J+	0	R	0	R	0	R	0.507	UJ	0	R	51.3	
		Perfluorohexanoic acid (PFHxA)	NG/G	2.39	U	0.573	J	0.356	U	0.366	UJ	0.281	UJ	0	R	0	R	0	R	0.347	UJ	0	R	28.8	
		Perfluoroheptanoic acid (PFHpA)	NG/G	2.26	UJ	0.335	UJ	0.337	U	0.347	UJ	0.266	UJ	0	R	0	R	0	R	0.329	UJ	0	R	74.5	
		Perfluorooctanoic acid (PFOA)	NG/G	1.61	U	0.732		0.999		0.545		0.19	UJ	0.172	UJ	0.185	UJ	0.202	UJ	0.235	UJ	0.302	J	54.1	
		Perfluorononanoic acid (PFNA)	NG/G	2.32	U	0.894		0.991		0.478		0.274	U	0.247	UJ	0.266	UJ	0.29	UJ	0.338	UJ	0.541	U	23.1	
		Perfluorodecanoic acid (PFDA)	NG/G	2.52	U	0.476		0.464		0.339	J	0.297	U	0.268	UJ	0.288	UJ	0.315	UJ	0.366	UJ	0.586	U	2.73	
		Perfluoroundecanoic acid (PFUnA)	NG/G	1.94	U	1.63		1.3		1.11		0.228	U	0.206	UJ	0.221	UJ	0.242	UJ	0.282	UJ	0.451	U	8.85	
		Perfluorododecanoic acid (PFDoA)	NG/G	1.55	U	0.829		0.86		0.725		0.183	U	0.165	UJ	0.177	UJ	0.194	UJ	0.225	UJ	0.361	U	3.5	
		Perfluorotridecanoic acid (PFTrDA)	NG/G	2.26	J	7.3		3.11		3.75		0.297	U	0.268	UJ	0.288	UJ	0.315	UJ	0.366	UJ	0.586	U	2.38	
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	2	U	1.08		0.857		0.928		0.236	U	0.213	UJ	0.229	UJ	0.25	UJ	0.291	UJ	0.466	U	1.5	
		Perfluorobutanesulfonic acid (PFBS)	NG/G	2.19	U	0.325	U	0.327	U	0.337	U	0.259	UJ	0.234	UJ	0.251	UJ	0.274	UJ	0.319	UJ	0.511	U	26.6	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	1.29	U	0.191	U	0.192	U	0.198	U	0.152	U	0.137	UJ	0.148	U	0.161	UJ	0.188	UJ	0.301	U	544	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	1.94	U	1.68		1.16		2.26		0.228	U	0.206	UJ	0.221	U	1.63	J	0.282	UJ	0.451	U	11400	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	2.26	U	0.335	U	0.337	U	0.424		0.266	U	0.241	U	0.258	UJ	0.282	U	0.329	U	0.526	U	84	
		Perfluorooctanesulfonic acid (PFOS)	NG/G	26.1		5.86		5.62		38.6		0.297	U	0.268	U	0.288	UJ	4.33		0.18	J	0.793		2310	
		Perfluorononanesulfonic acid (PFNS)	NG/G	2.55	U	0.378	U	0.38	U	0.391	U	0.3	U	0.271	U	0.292	UJ	0.319	U	0.371	U	0.594	U	21.3	
		Perfluorodecanesulfonic acid (PFDS)	NG/G	2.13	U	0.316	U	0.317	U	0.322	J	0.251	U	0.227	U	0.244	UJ	0.266	U	0.31	U	0.496	U	61.1	
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	1	J	0.182	U	0.183	U	0.188	U	0.144	U	0.131	U	0.14	UJ	0.719		0.178	U	0.286	U	92.4	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	8.52	U	1.26	U	1.27	U	1.31	U	1	U	0.907	UJ	0.974	U	1.06	UJ	1.24	UJ	1.98	U	4.19	UJ
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	5.23	U	0.775	U	0.779	U	0.802	U	0.616	U	0.557	UJ	0.598	U	0.653	UJ	0.761	UJ	1.22	U	1.53	J-
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	5.16	U	0.766	U	0.769	U	0.792	U	0.608	U	0.55	UJ	0.59	U	0.645	UJ	0.751	UJ	1.2	U	6.11	J
		Perfluorooctane sulfonamide (PFOSA)	NG/G	23.3		0.842		3.48		1.24		0.122	U	0.11	U	0.118	UJ	0.129	U	0.15	U	0.241	U	94.2	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	3.83		0.481		1.33		0.65		0.076	U	0.0687	U	0.0738	UJ	0.0806	U	0.0939	U	0.15	U	0.317	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	12.1		2.4		7.34		2.06		0.259	U	0.234	U	0.251	UJ	0.274	U	0.319	U	0.511	U	1.08	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	2.39	U	0.354	U	0.356	U	0.366	U	0.281	U	0.254	U	0.273	UJ	0.298	U	0.347	U	0.556	U	1.17	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	2.45	U	0.364	U	0.245	J-	0.376	U	0.289	U	0.261	U	0.28	UJ	0.306	U	0.357	U	0.571	U	1.21	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	12.2	J	1.83	U	2.69	J	1.89	U	1.45	U	1.31	U	1.41	UJ	1.54	U	1.79	U	2.87	U	6.06	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	22.5	J	1	J	7.07		1.98	U	1.52	U	1.37	U	1.48	UJ	1.61	U	1.88	U	3.01	U	6.35	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	7.48	U	1.11	UJ	1.12	U	1.15	UJ	0	R	0	R	0	R	0	R	1.09	UJ	0	R	3.68	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	5.81	U	0.861	UJ	0.865	U	0.891	UJ	0	R	0	R	0	R	0	R	0.845	UJ	0	R	2.86	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	4.45	U	0.66	UJ	0.663	U	0.683	UJ	0.525	UJ	0	R	0	R	0	R	0.648	UJ	0	R	2.19	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	3.48	U	0.517	UJ	0.305	J	0.535	UJ	0.411	UJ	0	R	0	R	0	R	0.507	UJ	0	R	1.71	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	1.35	U	0.201	UJ	0.202	U	0.208	UJ	0.16	UJ	0	R	0	R	0	R	0.197	UJ	0	R	0.667	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	8.06	U	1.2	UJ	1.2	U	1.24	UJ	0	R	0	R	0	R	0	R	1.17	UJ	0	R	3.97	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	7.68	U	1.14	UJ	1.14	U	1.18	UJ	0	R	0	R	0	R	0	R	1.12	UJ	0	R	3.78	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	2.26	U	0.335	UJ	0.337	U	0.347	UJ	0.266	UJ	0	R	0	R	0	R	0.329	UJ	0	R	1.11	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	3.16	U	0.469	UJ	0.471	U	0.485	UJ	0.373	UJ	0	R	0	R	0	R	0.46	UJ	0	R	1.56	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	44.1	U	6.55	UJ	6.58	U	6.77	UJ	5.2	UJ	0	R	0	R	0	R	6.42	UJ	0	R	48.1	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	23.9	U	3.54	UJ	3.56	U	4.08	J	2.81	UJ	0	R	0	R	0	R	3.47	UJ	0	R	1530	

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			SDG	24-0885																			
			Location	E-T-BIOC_RNT02		E-T-BIOD_RNT01		E-T-BIOE_RNT01		E-T-BIOF_RNT01		E-T-BIOI_RNT01		E-T-BIOJ_RNT01		E-T-BIOK_RNT01		E-T-BIOL_RNT01		E-T-BION_RNT01		E-T-BIOP_RNT01		E-T-BIOQ_RNT01	
			Sample Date	9/13/2024		8/16/2024		9/11/2024		9/12/2024		8/14/2024		8/15/2024		8/14/2024		8/14/2024		8/13/2024		9/11/2024		8/16/2024	
			Sample ID	E-T-BIOC_RNT02_20240913		E-T-BIOD_RNT01_20240816		E-T-BIOE_RNT01_20240911		E-T-BIOF_RNT01_20240912		E-T-BIOI_RNT01_20240814		E-T-BIOJ_RNT01_20240815		E-T-BIOK_RNT01_20240814		E-T-BIOL_RNT01_20240814		E-T-BION_RNT01_20240813		E-T-BIOP_RNT01_20240911		E-T-BIOQ_RNT01_20240816	
			QC Code	N		N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	7.46		2.11	U	2.15	U	1.96	U	1.78	U	2.04	U	1.84	U	1.84	U	1.9	U	1.9	U	1.27	J
		Perfluoropentanoic acid (PFPeA)	NG/G	18.5	J	2.04	U	2.31	J	1.89	UJ	0.967	J	1.96	U	2.72		1.77	U	1.83	UJ	1.83	U	3.2	
		Perfluorohexanoic acid (PFHxA)	NG/G	17.3	J	1.4	U	1.42	U	1.3	UJ	1.17	U	1.35	U	1.21	U	1.21	U	1.25	UJ	1.25	U	1.35	U
		Perfluoroheptanoic acid (PFHpA)	NG/G	15.9	J	1.32	U	1.35	U	1.23	UJ	1.11	U	1.27	U	1.15	U	1.15	U	1.19	UJ	1.19	U	1.27	U
		Perfluorooctanoic acid (PFOA)	NG/G	11.4		0.943	U	0.962	U	0.877	U	0.794	U	0.909	U	0.82	U	0.82	U	0.847	U	0.847	U	6.25	
		Perfluorononanoic acid (PFNA)	NG/G	4.03		1.36	U	1.38	U	1.26	U	1.14	U	1.31	U	1.18	U	1.18	U	1.22	U	1.22	U	2.53	
		Perfluorodecanoic acid (PFDA)	NG/G	1.4		1.47	U	1.5	U	1.37	U	1.24	U	1.42	U	1.28	U	1.28	U	1.32	U	1.32	U	1.42	U
		Perfluoroundecanoic acid (PFUnA)	NG/G	4.2		1.13	U	1.15	U	1.05	U	0.952	U	1.09	U	0.984	U	0.984	U	1.02	U	1.02	U	1.09	U
		Perfluorododecanoic acid (PFDoA)	NG/G	2.76		0.906	U	0.923	U	0.842	U	0.762	U	0.873	U	0.787	U	0.787	U	0.814	U	0.814	U	0.873	U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	2.79		1.47	U	1.5	U	1.37	U	1.24	U	1.42	U	1.28	U	1.28	U	1.32	U	1.32	U	1.42	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	1.44		1.17	U	1.19	U	1.09	U	0.984	U	1.13	U	1.02	U	1.02	U	1.05	U	1.05	U	1.13	U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	3.32	J	1.28	U	1.31	U	1.19	U	1.08	U	1.24	U	1.11	U	1.11	U	1.15	U	1.15	U	1.24	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	139	J	0.755	U	0.769	U	0.702	U	0.635	U	0.727	U	0.656	U	0.656	U	0.678	U	0.678	U	0.727	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	5810		1.13	U	1.15	U	1.05	U	0.952	U	2.13	J	6.81		0.984	UJ	1.02	U	1.02	U	38.3	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	8.05		1.32	U	1.35	U	1.23	U	1.11	U	1.27	U	1.98		1.15	U	1.19	U	1.19	U	2.94	
		Perfluorooctanesulfonic acid (PFOS)	NG/G	435		24.4		102		2.13		23.3	J-	30.1		145		6.51		35.3		25.5		69.4	
		Perfluorononanesulfonic acid (PFNS)	NG/G	5.59		1.49	U	1.52	U	1.39	U	1.25	U	1.44	U	1.3	U	1.3	U	1.34	U	1.09	J	1.44	U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	25		1.25	U	1.27	U	1.16	U	1.05	U	1.2	U	1.08	U	1.08	U	1.12	U	1.12	U	1.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	44		0.717	U	0.731	U	0.667	U	0.603	U	0.691	U	0.623	U	0.623	U	0.647	J	0.644	U	0.691	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	4.47	UJ	4.98	U	5.08	U	4.63	U	4.19	U	4.8	U	4.33	U	4.33	U	4.47	U	4.47	U	4.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	2.99	J-	3.06	U	3.12	U	2.84	U	2.57	U	2.95	U	2.66	U	2.66	U	2.75	U	2.75	U	2.95	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	10.2	J	3.02	U	3.08	U	2.81	U	2.54	U	2.91	U	1.34	J	2.62	U	2.71	U	2.71	U	2.91	U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	108		0.604	U	0.615	U	0.561	U	0.508	U	0.582	U	10.5		0.525	U	0.542	U	0.542	U	0.582	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.339	U	0.377	U	0.385	U	0.351	U	0.317	U	0.364	U	0.328	U	0.328	U	0.339	U	0.339	U	0.364	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	1.15	U	1.28	U	1.31	U	1.19	U	1.08	U	1.24	U	1.11	UJ	1.11	U	1.15	U	1.15	U	1.24	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	1.25	U	1.4	U	1.42	U	1.3	U	1.17	U	1.35	U	1.21	U	1.21	U	1.25	U	1.25	U	1.35	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	1.29	U	1.43	U	1.46	U	1.33	U	1.21	U	1.38	U	1.25	U	1.25	U	1.29	U	1.29	U	1.38	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	6.47	U	7.21	U	7.35	U	6.7	U	6.06	U	6.95	U	6.26	U	6.26	U	6.47	U	6.47	U	6.95	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	6.78	U	7.55	U	7.69	U	7.02	U	6.35	U	7.27	U	0	R	6.56	U	0	R	6.78	U	7.27	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	3.93	UJ	4.38	U	4.46	U	4.07	UJ	3.68	U	4.22	U	3.8	U	3.8	U	3.93	UJ	3.93	U	4.22	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	3.05	UJ	3.4	U	3.46	U	3.16	UJ	2.86	U	3.27	U	2.95	U	2.95	U	3.05	UJ	3.05	U	3.27	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	2.34	UJ	2.6	U	2.65	U	2.42	UJ	2.19	U	2.51	U	2.26	U	2.26	U	2.34	UJ	2.34	U	2.51	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	1.83	UJ	2.04	U	2.08	U	1.89	UJ	1.71	U	1.96	U	1.77	U	1.77	U	1.83	UJ	1.83	U	1.96	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.712	UJ	0.792	U	0.808	U	0.737	UJ	0.667	U	0.764	U	0.689	U	0.689	U	0.712	UJ	0.712	U	0.764	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	4.24	UJ	4.72	U	4.81	U	4.39	UJ	3.97	U	4.55	U	4.1	U	4.1	U	4.24	UJ	4.24	U	4.55	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	4.03	UJ	4.49	U	4.58	U	4.18	UJ	3.78	U	4.33	U	3.9	U	3.9	U	4.03	UJ	4.03	U	4.33	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	1.19	UJ	1.32	U	1.35	U	1.23	UJ	1.11	U	1.27	U	1.15	U	1.15	U	1.19	UJ	1.19	U	1.27	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	1.66	UJ	1.85	U	1.88	U	1.72	UJ	1.56	U	1.78	U	1.61	U	1.61	U	1.66	UJ	1.66	U	1.78	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	34.8	J	25.8	U	26.3	U	24	UJ	21.7	U	24.9	U	22.4	U	22.4	U	23.2	UJ	23.2	U	24.9	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	470	J	14	U	14.2	U	13	UJ	11.7	U	21.5	J	12.1	U	12.1	U	12.5	UJ	12.5	U	13.5	U

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0652	E1633DR	T	C6637-FS	E-A-BIOP_PLT01_20240813	Perfluorohexanesulfonic acid (PFHxS)	0.441	J	0.441	J	TR	NG/G
			C6638-FS	E-A-BIOP_PLT02_20240813	Perfluorononanoic acid (PFNA)	0.341	J	0.341	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.548	J	0.548	J	TR	NG/G
			C6639-FS	E-A-BIOR_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.305	J	0.305	J	TR	NG/G
			C6640-FS	E-A-BIOT_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.734	J	0.734	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.268	J	0.268	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.505	U	0.505	UJ	MSL	NG/G
			C6643-FS	E-A-BIOY_PLT01_20240813	Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.318	J	0.318	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.293	J	0.293	J	TR	NG/G
24-0698	E1633DR	T	C6977-FS	E-T-BIOC_INV01_20240815	Perfluoroheptanoic acid (PFHpA)	121		121	J+	EISL	NG/G
			C6978-FS	E-T-BIOC_INV02_20240815	Perfluorobutanoic acid (PFBA)	16.6	J	16.6	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	4.38	U	4.38	UJ	EISL	NG/G
					Perfluorooctanoic acid (PFOA)	8.32	I	8.32	J	IAG, MSD	NG/G
					Perfluorononanoic acid (PFNA)	4.66	J	4.66	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	4.61	J	4.61	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.93	J	1.93	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	5.26		5.26	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	3.88	U	3.88	UJ	EISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	493		493	J	MSD	NG/G
					Perfluorooctanesulfonic acid (PFOS)	431		431	J	MSD	NG/G
					Perfluorononanesulfonic acid (PFNS)	3.33	J	3.33	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	4.44	J	4.44	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	3.43	J	3.43	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	39.2		39.2	J	LDD	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.84	J	2.84	J	TR	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	11	J	11	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	144		144	J+	LDD, MSH	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	164		164	J	LDD	NG/G
					Perfluorobutanoic acid (PFBA)	7.57	J	7.57	J	TR	NG/G

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24-0698	E1633DR	T	C6979-FS	E-T-BIOD_INV01_20240815	Perfluoropentanoic acid (PFPeA)	9.43		9.43	J-	EISH, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	15		15	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	2.33	U	2.33	UJ	EISL, ISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	1.66	J	1.66	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.13	J	2.13	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.73	U	7.73	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	6	U	6	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	4.6	U	4.6	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.6	U	3.6	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.4	U	1.4	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	8.33	U	8.33	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	7.93	U	7.93	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.33	U	2.33	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	3.27	U	3.27	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	108		108	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	83.4		83.4	J	ISL	NG/G
			C6980-FS	E-T-BIOD_INV02_20240815	Perfluoroheptanoic acid (PFHpA)	8.49	I	8.49	J+	EISL, IAG	NG/G
					Perfluorotridecanoic acid (PFTrDA)	8.84		8.84	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	2.04		2.04	J+	EISL	NG/G
			C6989-FS	E-T-BIOE_INV01_20240818	Perfluoroheptanoic acid (PFHpA)	4.67	U	4.67	UJ	EISL	NG/G
					Perfluorononanoic acid (PFNA)	3.07	J	3.07	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	5.2	U	5.2	UJ	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	4.13	U	4.13	UJ	EISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	2.31	J	2.31	J	TR	NG/G
			C6989-FS	E-T-BIOE_INV01_20240818	Perfluorooctanesulfonic acid (PFOS)	327		327	J	LDD	NG/G
					Perfluorodecanesulfonic acid (PFDS)	2.27	J	2.27	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	11.3	J	11.3	J	TR	NG/G

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24-0698	E1633DR	T			2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	71	J	71	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	73.2	J	73.2	J	TR	NG/G
			C6990-FS	E-T-BIOE_INV02_20240819	Perfluoroundecanoic acid (PFUnA)	2.09	J	2.09	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.76	J	1.76	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	5.68	J	5.68	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.95	J	1.95	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	29.3	J	29.3	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	45.2	J	45.2	J	TR	NG/G
			C6991-FS	E-T-BIOG_INV01_20240817	Perfluoropentanoic acid (PFPeA)	698		698	J-	EISH, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	364		364	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	238		238	J+	EISL, ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	218		218	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	103		103	J+	EISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1260	D	1260	J-	EISH	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.48	U	7.48	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	5.81	U	5.81	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	4.45	U	4.45	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.48	U	3.48	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.35	U	1.35	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	8.06	U	8.06	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	7.68	U	7.68	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.26	U	2.26	UJ	ISL	NG/G
					Perfluoropentanoic acid (PFPeA)	151		151	J-	EISH, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	95		95	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	27.8		27.8	J	ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	61.9		61.9	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	13		13	J+	EISL	NG/G

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24-0698	E1633DR	T	C6992-FS	E-T-BIOH_INV01_20240817	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8.8	U	8.8	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.09	J	2.09	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.73	U	7.73	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	6	U	6	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	4.6	U	4.6	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.6	U	3.6	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.4	U	1.4	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	8.33	U	8.33	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	7.93	U	7.93	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.33	U	2.33	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	537		537	J-	EISH, ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	8050		8050	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	11800		11800	J	ISL	NG/G
			C6993-FS	E-T-BIOH_INV02_20240817	Perfluoropentanoic acid (PFPeA)	673		673	J-	EISH	NG/G
					Perfluoroheptanoic acid (PFHpA)	172	I	172	J+	EISL, IAG	NG/G
					Perfluorotridecanoic acid (PFTrDA)	67.6		67.6	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	16.9		16.9	J+	EISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	19.6		19.6	J-	EISH	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	297		297	J-	EISH	NG/G

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24-0698	E1633DR	T	C6981-FS	E-T-BIOI_INV01_20240816	Perfluorobutanoic acid (PFBA)	0.628	J	0.628	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	1.24		1.24	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.37	U	0.37	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.35	U	0.35	UJ	EISL, ISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	3.93	J	3.93	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.16	U	1.16	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.9	U	0.9	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.69	U	0.69	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.54	U	0.54	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.21	U	0.21	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.25	U	1.25	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.19	U	1.19	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.35	U	0.35	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.49	U	0.49	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	10.6		10.6	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	11.8		11.8	J	ISL	NG/G
			C6982-FS	E-T-BIOI_INV02_20240816	Perfluoropentanoic acid (PFPeA)	0.505	J	0.505	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.547	U	0.547	UJ	EISL	NG/G
					Perfluorononanoic acid (PFNA)	0.346	J	0.346	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.43	J	0.43	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.23	J	0.23	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.267	J	0.267	J	TR	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.675	J	0.675	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	7.88	J	7.88	J	TR	NG/G

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24-0698	E1633DR	T	C6983-FS	E-T-BIOJ_INV01_20240816	Perfluoroheptanoic acid (PFHpA)	49.7		49.7	J+	EISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	52.6		52.6	J-	EISH	NG/G
			C6994-FS	E-T-BIOJ_INV02_20240816	Perfluoropentanoic acid (PFPeA)	453		453	J-	EISH, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	179		179	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	148		148	J+	EISL, ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	74.3		74.3	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	57.5		57.5	J+	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	8.82	J	8.82	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.92	U	8.92	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	6.92	U	6.92	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	5.31	U	5.31	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	4.15	U	4.15	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.62	U	1.62	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.62	U	9.62	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.15	U	9.15	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.69	U	2.69	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	2190		2190	J-	EISH, ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	34300		34300	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29100		29100	J	ISL	NG/G
			C6984-FS	E-T-BIOK_INV01_20240814	Perfluoropentanoic acid (PFPeA)	42.3		42.3	J-	EISH, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	57.7		57.7	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	2.92	U	2.92	UJ	EISL, ISL	NG/G
					Perfluorododecanoic acid (PFDoA)	24.2		24.2	J-	MSL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	49.5		49.5	J	MSD	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	30.4		30.4	J	MSD	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.67	U	0	R	MSL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	1450	D	1450	J	MSD	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	38.3		38.3	J	MSD	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0698	E1633DR	T	C6984-FS	E-T-BIOK_INV01_20240814	Perfluorododecanesulfonic acid (PFDoS)	4.94		4.94	J-	MSD, MSL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	6.38	J	6.38	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.35	J	2.35	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.67	U	9.67	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.5	U	7.5	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	5.75	U	5.75	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	4.5	U	4.5	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.75	U	1.75	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	10.4	U	10.4	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.92	U	9.92	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	2.92	U	2.92	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	12	J	12	J	MSD, MSH, EISH, ISL, TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	170		170	J+	LDD, MSH, ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	345		345	J+	MSH, ISL	NG/G
			C6995-FS	E-T-BIOL_INV01_20240819	Perfluoroheptanoic acid (PFHpA)	3.04	U	3.04	UJ	EISL	NG/G
					Perfluorooctanoic acid (PFOA)	2.87	J	2.87	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.64	J	1.64	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	19.4		19.4	J+	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	5.9		5.9	J+	EISL	NG/G
			C6995-FS	E-T-BIOL_INV01_20240819	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	J	20	J	TR	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	8.26	J	8.26	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	62.9	J	62.9	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	29.2	J	29.2	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.352	U	0.352	UJ	EISL	NG/G
					Perfluorononanoic acid (PFNA)	0.249	J	0.249	J	TR	NG/G

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24-0698	E1633DR	T	C6985-FS	E-T-BIOM_INV01_20240816	Perfluorodecanoic acid (PFDA)	0.324	J	0.324	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.735	I	0.735	J	IAG	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.37	J	0.37	J	TR	NG/G
			C6986-FS	E-T-BION_INV01_20240814	Perfluoroheptanoic acid (PFHpA)	2.41	U	2.41	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.16	J	2.16	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	7.24	J	7.24	J	TR	NG/G
			C6987-FS	E-T-BIOO_INV01_20240814	Perfluorobutanoic acid (PFBA)	7.26	J	7.26	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	2.5	U	2.5	UJ	EISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	51	J	51	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	36.6	J	36.6	J	TR	NG/G
			C6988-FS	E-T-BIOQ_INV01_20240816	Perfluorobutanoic acid (PFBA)	8.06	J	8.06	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	2.92	U	2.92	UJ	EISL	NG/G
					Perfluorodecanoic acid (PFDA)	2.03	J	2.03	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	3.09	J	3.09	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1.09	J	1.09	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.45	J	2.45	J	TR	NG/G
24-0699	E1633DR	T	C7015-FS	E-A-BIOA_INV01_20240820	Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	2.09	J	2.09	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	1.76	J	1.76	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1.34	J	1.34	J	TR	NG/G

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24-0699	E1633DR	T	C7016-FS	E-A-BIOA_INV02_20240820	Perfluorotetradecanoic acid (PFTeDA)	2.27	J	2.27	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	2.43	J	2.43	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	2.56	J	2.56	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	27.7	J	27.7	J	TR	NG/G
			C7003-FS	E-A-BIOB_INV01_20240817	Perfluoropentanoic acid (PFPeA)	2.04	U	2.04	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	1.4	U	1.4	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	1.32	U	1.32	UJ	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.992	J	0.992	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.996	J	0.996	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.811	J	0.811	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.38	U	4.38	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.4	U	3.4	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.6	U	2.6	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	2.04	U	2.04	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.792	U	0.792	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.72	U	4.72	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.49	U	4.49	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.32	U	1.32	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	1.85	U	1.85	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	25.8	U	25.8	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	14	U	14	UJ	ISL	NG/G
			C7017-FS	E-A-BIOCS_INV01_20240820	Perfluorooctanoic acid (PFOA)	0.566	J	0.566	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.03	J	1.03	J	TR	NG/G

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24-0699	E1633DR	T	C7018-FS	E-A-BIOE_INV01_20240819	Perfluorononanoic acid (PFNA)	0.904	J	0.904	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.33	J	1.33	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.919	J	0.919	J	TR	NG/G
			C7019-FS	E-A-BIOF_INV01_20240819	Perfluorooctanoic acid (PFOA)	1.17	J	1.17	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.37	I	1.37	J	IAG	NG/G
					Perfluorododecanoic acid (PFDoA)	0.61	J	0.61	J	TR	NG/G
			C7006-FS	E-A-BIOG_INV01_20240818	Perfluoropentanoic acid (PFPeA)	0.54	U	0.54	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.37	U	0.37	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.35	U	0.35	UJ	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.355	J	0.355	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.319	J	0.319	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.292	J	0.292	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.232	J	0.232	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.296	J	0.296	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.16	U	1.16	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.9	U	0.9	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.69	U	0.69	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.54	U	0.54	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.21	U	0.21	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.25	U	1.25	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.19	U	1.19	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.35	U	0.35	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.49	U	0.49	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	6.84	U	6.84	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.7	U	3.7	UJ	ISL	NG/G
			C7007-FS	E-A-BIOH_INV01_20240819	Perfluoroheptanoic acid (PFHpA)	0.838	J	0.838	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.923	J	0.923	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.34	J	1.34	J	TR	NG/G

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24-0699	E1633DR	T			Perfluorohexanesulfonic acid (PFHxS)	4.82	I	4.82	J	IAG	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.459	J	0.459	J	TR	NG/G
			C7008-FS	E-A-BIOI_INV01_20240817	Perfluorotridecanoic acid (PFTrDA)	1.29	J	1.29	J	TR	NG/G
			C7009-FS	E-A-BIOJ_INV01_20240815	Perfluoropentanoic acid (PFPeA)	2.35	U	2.35	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	1.61	U	1.61	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	1.52	U	1.52	UJ	ISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.839	J	0.839	J	TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	63.1		63.1	J-	EISH	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	5.04	U	5.04	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.91	U	3.91	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	3	U	3	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	2.35	U	2.35	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.913	U	0.913	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.43	U	5.43	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.17	U	5.17	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.52	U	1.52	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	2.13	U	2.13	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	29.7	U	29.7	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	12.4	J	12.4	J	ISL, TR	NG/G
			C7010-FS	E-A-BIOK_INV01_20240816	Perfluorononanoic acid (PFNA)	0.217	J	0.217	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.27	I	1.27	J	IAG	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.238	J	0.238	J	TR	NG/G
			C7010-FS	E-A-BIOK_INV01_20240816	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.615	J	0.615	J-	EISH, TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	12		12	J-	EISH	NG/G
					Perfluorooctane sulfonamide (PFOSA)	22.5		22.5	J-	EISH	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.283	J	0.283	J-	EISH, TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.395	J	0.395	J	TR	NG/G

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24-0699	E1633DR	T	C7011-FS	E-A-BIOK_INV02_20240818	Perfluorononanoic acid (PFNA)	0.229	J	0.229	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.87	I	1.87	J	IAG	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.286	J	0.286	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	2.05	I	2.05	J	IAG	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.704	J	0.704	J-	EISH, TR	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.761		0.761	J-	EISH	NG/G
			C7012-FS	E-A-BIOL_INV01_20240815	Perfluorobutanoic acid (PFBA)	2.09	J	2.09	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	2.46	J	2.46	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	1.13	J	1.13	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.971	J	0.971	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	1.17	J	1.17	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.49	J	1.49	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	32.5	J	32.5	J	TR	NG/G
			C7013-FS	E-A-BION_INV01_20240815	Perfluorobutanoic acid (PFBA)	2.79	J	2.79	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.688	J	0.688	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	1.11	J	1.11	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	1.05	J	1.05	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.666	J	0.666	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.873	J	0.873	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	1.17	J	1.17	J	TR	NG/G
24-0699	E1633DR	T	C7014-FS	E-A-BION_INV02_20240815	Perfluorobutanoic acid (PFBA)	1.16	J	1.16	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	1.59	J	1.59	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.07	J	1.07	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.54	J	1.54	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.31	J	1.31	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.986	J	0.986	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.992	J	0.992	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.828	J	0.828	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.786	J	0.786	J	TR	NG/G

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					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.17	J	1.17	J	TR	NG/G
			C7020-FS	E-A-BIOPB_INV01_20240820	Perfluorooctanoic acid (PFOA)	0.82	J	0.82	J	TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.759	J	0.759	J	TR	NG/G
24-0700	E1633DR	T	C7033-FS	E-A-BIOA_FSH01_20240820	Perfluorooctanoic acid (PFOA)	1.32	J	1.32	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1.59	J	1.59	J	TR	NG/G
			C7021-FS	E-A-BIOB_FSH01_20240815	Perfluorononanoic acid (PFNA)	0.798	J	0.798	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.01	J	1.01	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.887	J	0.887	J	TR	NG/G
			C7022-FS	E-A-BIOC_FSH01_20240817	Perfluorononanoic acid (PFNA)	1.18	J	1.18	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.48	J	1.48	J	TR	NG/G
			C7023-FS	E-A-BIOCS_FSH01_20240819	Perfluorononanoic acid (PFNA)	1.22	J	1.22	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	1.65	J	1.65	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.23	J	1.23	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	1.09	J	1.09	J	TR	NG/G
			C7025-FS	E-A-BIOE_FSH01_20240819	Perfluorododecanoic acid (PFDoA)	1.12	J	1.12	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.922	J	0.922	J	TR	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0700	E1633DR	T	C7026-FS	E-A-BIOF_FSH01_20240817	Perfluorooctanoic acid (PFOA)	0.638	J	0.638	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.6	J	1.6	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	1.23	J	1.23	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.519	J	0.519	J	TR	NG/G
			C7027-FS	E-A-BIOG_FSH01_20240817	Perfluorododecanoic acid (PFDoA)	1.38	J	1.38	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	1.52	J	1.52	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	1.08	J	1.08	J	TR	NG/G
			C7028-FS	E-A-BIOH_FSH01_20240818	Perfluorododecanoic acid (PFDoA)	1.42	J	1.42	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.961	J	0.961	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.467	J	0.467	J	TR	NG/G
			C7030-FS	E-A-BIOJ_FSH01_20240815	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	9.76	U	9.76	UJ	EISL	NG/G
			C7031-FS	E-A-BIOK_FSH01_20240817	Perfluorooctanoic acid (PFOA)	0.997	J	0.997	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.92	J	1.92	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.16	J	1.16	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	47.5		47.5	J-	EISH	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.17	J	1.17	J	TR	NG/G
			C7032-FS	E-A-BIOPB_FSH01_20240820	Perfluorodecanoic acid (PFDA)	1.38	J	1.38	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.498	J	0.498	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.99	J	0.99	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	8.16	U	0	R	EISL	NG/G
24-0783	E1633DR	T	C7940-FS	E-T-BIOA_INV01_20240910	Perfluoroheptanoic acid (PFHpA)	2.26	U	2.26	UJ	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	2.26	J	2.26	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1	J	1	J	TR	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	12.2	J	12.2	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22.5	J	22.5	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.751	J	0.751	J	ISL, TR	NG/G
					Perfluorohexanoic acid (PFHxA)	0.573		0.573	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.335	U	0.335	UJ	EISL, ISL	NG/G

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24-0783	E1633DR	T	C7941-FS	E-T-BIOB_INV01_20240910	N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	1	J	1	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.11	U	1.11	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.861	U	0.861	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.66	U	0.66	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.517	U	0.517	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.201	U	0.201	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.2	U	1.2	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.14	U	1.14	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.335	U	0.335	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.469	U	0.469	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	6.55	U	6.55	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.54	U	3.54	UJ	ISL	NG/G
			C7945-FS	E-T-BIOF_INV01_20240910	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.245	J	0.245	J-	EISH, TR	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	2.69	J	2.69	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.305	J	0.305	J	TR	NG/G
			C7950-FS	E-T-BIOP_INV01_20240910	Perfluorobutanoic acid (PFBA)	1.22	J	1.22	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.893		0.893	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.366	U	0.366	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.347	U	0.347	UJ	EISL, ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.339	J	0.339	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.322	J	0.322	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.15	U	1.15	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.891	U	0.891	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.683	U	0.683	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.535	U	0.535	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.208	U	0.208	UJ	ISL	NG/G

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24-0783	E1633DR	T	C7950-FS	E-T-BIOP_INV01_20240910	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.24	U	1.24	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.18	U	1.18	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.347	U	0.347	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.485	U	0.485	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	6.77	U	6.77	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	4.08	J	4.08	J	ISL, TR	NG/G
24-0784	E1633DR	T	C7953-FS	E-T-BIOA_PLT01_20240910	Perfluorobutanoic acid (PFBA)	1.11	J	1.11	J+	EISL, TR	NG/G
					Perfluoropentanoic acid (PFPeA)	11.6		11.6	J+	EISL, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.281	U	0.281	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.266	U	0.266	UJ	EISL, ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.19	U	0.19	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.259	U	0.259	UJ	LCL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.882	U	0	R	EISL, ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.684	U	0	R	EISL, ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.525	U	0.525	UJ	EISL, ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.411	U	0.411	UJ	EISL, ISL, LCL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.16	U	0.16	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.951	U	0	R	EISL, ISL	NG/G
			C7953-FS	E-T-BIOA_PLT01_20240910	11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.905	U	0	R	EISL, ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.266	U	0.266	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.373	U	0.373	UJ	EISL, ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.2	U	5.2	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.81	U	2.81	UJ	ISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.371	U	0	R	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.254	U	0	R	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.241	U	0	R	ISL	NG/G

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24-0784	E1633DR	T	C7954-FS	E-T-BIOF_PLT01_20240910	Perfluorooctanoic acid (PFOA)	0.172	U	0.172	UJ	ISL	NG/G
					Perfluorononanoic acid (PFNA)	0.247	U	0.247	UJ	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.268	U	0.268	UJ	ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.206	U	0.206	UJ	ISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.165	U	0.165	UJ	ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.268	U	0.268	UJ	ISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.213	U	0.213	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.234	U	0.234	UJ	ISL, LCL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.137	U	0.137	UJ	ISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.206	U	0.206	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.907	U	0.907	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.557	U	0.557	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.55	U	0.55	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.797	U	0	R	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.619	U	0	R	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.474	U	0	R	ISL	NG/G
			C7954-FS	E-T-BIOF_PLT01_20240910	Perfluoro-4-methoxybutanoic acid (PFMBA)	0.371	U	0	R	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.144	U	0	R	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.859	U	0	R	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.818	U	0	R	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.241	U	0	R	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.337	U	0	R	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	4.7	U	0	R	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.54	U	0	R	ISL	NG/G
					Perfluorobutanoic acid (PFBA)	1.57		1.57	J+	EISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.399	U	0	R	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.273	U	0	R	ISL	NG/G

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24-0784	E1633DR	T	C7955-FS	E-T-BIOI_PLT01_20240910	Perfluoroheptanoic acid (PFHpA)	0.258	U	0	R	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.185	U	0.185	UJ	ISL	NG/G
					Perfluorononanoic acid (PFNA)	0.266	U	0.266	UJ	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.288	U	0.288	UJ	ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.221	U	0.221	UJ	ISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.177	U	0.177	UJ	ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.288	U	0.288	UJ	ISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.229	U	0.229	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.251	U	0.251	UJ	LCL, EISL, ISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.258	U	0.258	UJ	ISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.288	U	0.288	UJ	ISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.292	U	0.292	UJ	ISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.244	U	0.244	UJ	ISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.14	U	0.14	UJ	ISL	NG/G
24-0784	E1633DR	T	C7955-FS	E-T-BIOI_PLT01_20240910	Perfluorooctane sulfonamide (PFOSA)	0.118	U	0.118	UJ	ISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0738	U	0.0738	UJ	ISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.251	U	0.251	UJ	ISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.273	U	0.273	UJ	ISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.28	U	0.28	UJ	ISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	1.41	U	1.41	UJ	ISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	1.48	U	1.48	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.856	U	0	R	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.664	U	0	R	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.509	U	0	R	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.399	U	0	R	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.155	U	0	R	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.923	U	0	R	ISL	NG/G

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					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.878	U	0	R	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.258	U	0	R	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.362	U	0	R	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.05	U	0	R	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.73	U	0	R	ISL	NG/G
			C7956-FS	E-T-BIOJ_PLT01_20240910	Perfluoropentanoic acid (PFPeA)	0.435	U	0	R	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.298	U	0	R	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.282	U	0	R	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.202	U	0.202	UJ	ISL	NG/G
24-0784	E1633DR	T	C7956-FS	E-T-BIOJ_PLT01_20240910	Perfluorononanoic acid (PFNA)	0.29	U	0.29	UJ	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.315	U	0.315	UJ	ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.242	U	0.242	UJ	ISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.194	U	0.194	UJ	ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.315	U	0.315	UJ	ISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.25	U	0.25	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.274	U	0.274	UJ	ISL, LCL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.161	U	0.161	UJ	ISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	1.63		1.63	J	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.06	U	1.06	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.653	U	0.653	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.645	U	0.645	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.935	U	0	R	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.726	U	0	R	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.556	U	0	R	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.435	U	0	R	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.169	U	0	R	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.01	U	0	R	ISL	NG/G

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					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.96	U	0	R	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.282	U	0	R	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.395	U	0	R	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.52	U	0	R	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.98	U	0	R	ISL	NG/G

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0784	E1633DR	T	C7957-FS	E-T-BIOP_PLT01_20240910	Perfluorobutanoic acid (PFBA)	1.55		1.55	J+	EISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.507	U	0.507	UJ	EISL, ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.347	U	0.347	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.329	U	0.329	UJ	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.235	U	0.235	UJ	ISL	NG/G
					Perfluorononanoic acid (PFNA)	0.338	U	0.338	UJ	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.366	U	0.366	UJ	ISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.282	U	0.282	UJ	ISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.225	U	0.225	UJ	ISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.366	U	0.366	UJ	ISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.291	U	0.291	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.319	U	0.319	UJ	ISL, LCL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.188	U	0.188	UJ	ISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.282	U	0.282	UJ	ISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.18	J	0.18	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	1.24	U	1.24	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.761	U	0.761	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.751	U	0.751	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.09	U	1.09	UJ	EISL, ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.845	U	0.845	UJ	EISL, ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.648	U	0.648	UJ	EISL, ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.507	U	0.507	UJ	EISL, ISL, LCL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.197	U	0.197	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.17	U	1.17	UJ	EISL, ISL	NG/G
24-0784	E1633DR	T	C7957-FS	E-T-BIOP_PLT01_20240910	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.12	U	1.12	UJ	CVHL, EISL, ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.329	U	0.329	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.46	U	0.46	UJ	EISL, ISL	NG/G

Prepared by:AKN
Date:2/25/25
Checked by: MLB
Date:2/25/2025

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Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	6.42	U	6.42	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.47	U	3.47	UJ	ISL	NG/G
24-0885	E1633DR	T	C7004-FS	E-A-BIOC_INV01_20240816	Perfluoropentanoic acid (PFPeA)	0.812	U	0	R	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.556	U	0	R	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.526	U	0	R	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.302	J	0.302	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.74	U	0	R	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	1.35	U	0	R	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	1.04	U	0	R	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.812	U	0	R	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.316	U	0	R	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.88	U	0	R	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.79	U	0	R	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.526	U	0	R	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.737	U	0	R	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	10.3	U	0	R	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	5.56	U	0	R	ISL	NG/G
			C7942-FS	E-T-BIOC_RNT01_20240911	Perfluorobutanesulfonic acid (PFBS)	26.6		26.6	J	ISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	544		544	J	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	4.19	U	4.19	UJ	ISL	NG/G
			C7942-FS	E-T-BIOC_RNT01_20240911	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	1.53	J	1.53	J-	EISH, ISL, TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	6.11		6.11	J	ISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	6.35	U	6.35	UJ	EISL	NG/G
					Perfluoropentanoic acid (PFPeA)	18.5		18.5	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	17.3		17.3	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	15.9		15.9	J	ISL	NG/G

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24-0885	E1633DR	T	C7943-FS	E-T-BIOC_RNT02_20240913	Perfluorobutanesulfonic acid (PFBS)	3.32		3.32	J	ISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	139		139	J	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	4.47	U	4.47	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.99	J	2.99	J-	EISH, ISL, TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	10.2		10.2	J	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.93	U	3.93	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.05	U	3.05	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.34	U	2.34	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.83	U	1.83	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.712	U	0.712	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.24	U	4.24	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.03	U	4.03	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.19	U	1.19	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	1.66	U	1.66	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	34.8		34.8	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	470		470	J	ISL	NG/G
			C7944-FS	E-T-BIOE_RNT01_20240911	Perfluoropentanoic acid (PFPeA)	2.31	J	2.31	J	TR	NG/G
			C7946-FS	E-T-BIOF_RNT01_20240912	Perfluoropentanoic acid (PFPeA)	1.89	U	1.89	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	1.3	U	1.3	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	1.23	U	1.23	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.07	U	4.07	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.16	U	3.16	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.42	U	2.42	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.89	U	1.89	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.737	U	0.737	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.39	U	4.39	UJ	ISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0885	E1633DR	T			11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.18	U	4.18	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.23	U	1.23	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	1.72	U	1.72	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	24	U	24	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	13	U	13	UJ	ISL	NG/G
			C6997-FS	E-T-BIOI_RNT01_20240814	Perfluoropentanoic acid (PFPeA)	0.967	J	0.967	J	TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	23.3		23.3	J-	MSD, MSL	NG/G
			C6998-FS	E-T-BIOJ_RNT01_20240815	Perfluorohexanesulfonic acid (PFHxS)	2.13	I	2.13	J	IAG	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	21.5	J	21.5	J	TR	NG/G
			C6999-FS	E-T-BIOK_RNT01_20240814	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.34	J	1.34	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.11	U	1.11	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	6.56	U	0	R	EISL	NG/G
			C7000-FS	E-T-BIOL_RNT01_20240814	Perfluorohexanesulfonic acid (PFHxS)	0.984	U	0.984	UJ	MSL	NG/G

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Checked by: MLB
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0885	E1633DR	T	C7001-FS	E-T-BION_RNT01_20240813	Perfluoropentanoic acid (PFPeA)	1.83	U	1.83	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	1.25	U	1.25	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	1.19	U	1.19	UJ	ISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.647	J	0.647	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	6.78	U	0	R	EISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.93	U	3.93	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.05	U	3.05	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.34	U	2.34	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.83	U	1.83	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.712	U	0.712	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4.24	U	4.24	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.03	U	4.03	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.19	U	1.19	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	1.66	U	1.66	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	23.2	U	23.2	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	12.5	U	12.5	UJ	ISL	NG/G
			C7951-FS	E-T-BIOP_RNT01_20240911	Perfluorononanesulfonic acid (PFNS)	1.09	J	1.09	J	TR	NG/G
			C7002-FS	E-T-BIOQ_RNT01_20240816	Perfluorobutanoic acid (PFBA)	1.27	J	1.27	J	TR	NG/G

Prepared by:AKN
Date:2/25/25
Checked by: MLB
Date:2/25/2025

DATA VALIDATION REPORT

AUGUST 2024 TISSUE, LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JANUARY 29, 2025

DATA VALIDATION REPORT

AUGUST 2024 TISSUE, LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
5:3 FTCA	3-perfluoropentyl propanoic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
ADONA	4,8-dioxa-3H-perfluorononanoic acid
Batelle	Batelle Norwell Operations
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomer sulfonic acid
HFPO-DA	hexafluoropropylene oxide dimer acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NFDHA	nonafluoro-3,6-dioxaheptanoic acid
NIS	non-extracted internal standard
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBA	perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoDA	perfluorododecanoic acid
PFDoDS	perfluorododecanesulfonic acid
PFDS	perfluorodecanesulfonic acid
PFEESA	perfluoro(2-ethoxyethane)sulfonic acid

PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFMBA	perfluoro-4-methoxybutanoic acid
PFMPA	perfluoro-3-methoxypropanoic acid
PFPeA	perfluoropentanoic acid
PFPeS	perfluoropentanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFNA	perfluorononanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 74 tissue samples between 13 and 20 August 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to Batelle Norwell Operations (Batelle), located in Norwell, Massachusetts, where they were received between 16 and 22 August 2024. Batelle assigned the samples to sample delivery groups 24-0653, 24-0668, 24-0669, 24-0679, 24-0680, 24-0681, and 24-0697, and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) Stage 4 validation on a minimum of 10 percent (%) of the field samples reviewed in this report and Stage 2B validation on the remaining field sample data. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms and review of the raw analytical data. Stage 2B validation does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ISC;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by PFAS recovery in laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;

- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MS/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CBG	The analyte was detected in the associated calibration blank and the concentration detected in the sample was greater than the LOD and less than five times the concentration detected in the blank.
CVHL	High ISC recovery.
EISH	High EIS recovery.
EISL	Low EIS recovery.
IAG	Ion transition ratio is outside of expected limits.
ISL	Low NIS recovery.
LCH	High LCS recovery. Result may be biased high.
LCL	Low LCS recovery. Result may be biased low.
MSD	Imprecision between MS and MSD results.
MSH	High MS recovery. Result may be biased high.
MSL	Low MS recovery. Result may be biased low.
TR	The detected analyte concentration is less than the limit of quantitation (LOQ).

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report are considered usable with the limitations and exceptions described in Sections 7.1 through 8.0. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Batelle may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 90 days from sample preparation (filleting and/or grinding) and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 ION TRANSITIONS

Parent, quantification, and confirmation ion masses used for the analysis of the samples reviewed in this report matched the ions specified in EPA Method 1633 Table 10.

7.1.4 INITIAL CALIBRATION COMPLIANCE

Initial calibrations relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.5 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.6 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits, with the following exception:

- 9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS) recovery was high at 132% in the ISC associated with the analysis of samples E-A-BIOK_PLT01_20240816, E-A-BIOK_PLT02_20240816, and E-A-BIOM_PLT01_20240816. Per DoD data validation guidelines, WSP UJ qualified the non-detect 9Cl-PF3ONS results from the associated samples due to high ISC recovery. (UJ, CVHL)

7.1.7 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.8 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.9 LABORATORY AND CALIBRATION BLANK DETECTIONS

Target analytes were not detected in the laboratory and calibration blanks associated with the sample reviewed in this report, with the following exception:

- Perfluorooctanesulfonamide (PFOSA) was detected at a concentration of 0.164 nanograms per gram in the calibration blank associated with the analysis of samples E-T-BIOC_PLT01_20240815, E-T-BIOC_PLT02_20240815, E-T-BIOD_PLT01_20240815, E-T-BIOD_PLT02_20240815, and E-T-BIOG_PLT01_20240817. Data limitations are summarized below.
    - WSP J+ qualified the detected PFOSA results from samples, and E-T-BIOG_PLT01_20240817 because the detected concentrations were greater than the LOD but less than five times the concentration detected in the blank. (J+, CBG)
    - WSP U qualified the detected PFOSA results from samples E-T-BIOC_PLT01_20240815 and E-T-BIOC_PLT02_20240815 because the detected concentrations were greater than the LOD but less than the LOQ. (U, CBG)
    - PFOSA was not detected in the remaining associated samples and data usability is not adversely affected by the blank detection.

7.1.10 LABORATORY CONTROL SAMPLE ACCURACY

Low-level LCS (LLLCS) and LCS were included with each extraction batch, LLLCS spike concentrations were twice the LOQ, and LCS and LLLCS recoveries were within method-specified limits, with the following exceptions:

- Perfluorotridecanoic acid (PFTrDA [158%]), perfluoro-4-methoxybutanoic acid (PFMBA [33%]), 9Cl-PF3ONS (154%), and 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS [175%]) recoveries were outside limits in the LCS associated with the extraction of samples E-T-BIOC_PLT01_20240815, E-T-BIOC_PLT02_20240815, E-T-BIOD_PLT01_20240815, E-T-BIOD_PLT02_20240815, E-T-BIOG_PLT01_20240817, E-T-BIOG_PLT02_20240817, E-T-BIOH_PLT01_20240817, E-T-BIOH_PLT02_20240817, and E-T-BIOM_PLT01_20240815. Data limitations are summarized below.
    - WSP UJ qualified the non-detect PFMBA results from the associated samples due to potential low analytical bias. (UJ, LCL)

- PFTrDA, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

– PFMBA and 11Cl-PF3OUdS recoveries were outside limits at 34% and 162%, respectively, in the LCS associated with the extraction of samples E-A-BIOB_PLT01_20240815, E-A-BIOC_PLT01_20240816, E-A-BIOD_PLT01_20240817, E-A-BIOE_PLT01_20240818, E-A-BIOF_PLT01_20240816, E-A-BIOG_PLT01_20240817, E-A-BIOH_PLT01_20240817, E-A-BIOI_PLT01_20240817, E-A-BIOJ_PLT01_20240816, and E-T-BIOQ_PLT01_20240816. Data limitations are summarized below.

  - WSP J- qualified the detected and UJ qualified the non-detect PFMBA results from the associated samples due to potential low analytical bias. (J-/UJ, LCL)
  - 11Cl-PF3OUdS was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

– PFTrDA (157%), perfluorodecanesulfonic acid (PFDS [201%]), PFMBA (36%), and 11Cl-PF3OUdS (211%) recoveries were outside limits in the LCS associated with the extraction of samples E-A-BIOK_PLT01_20240816, E-A-BIOK_PLT02_20240816, E-A-BIOL-PLT01_20240815, E-A-BIOM_PLT01_20240816, E-A-BION_PLT01_20240815, E-A-BIOS_PLT01_20240817, E-A-BIOV_PLT01_20240815, and E-A-BIOX_PLT01_20240813. Data limitations are summarized below.

  - WSP J- qualified the detected and UJ qualified the non-detect PFMBA results from the associated samples due to potential low analytical bias. (J-/UJ, LCL)
  - WSP J+ qualified the detected PFTrDa result from sample E-A-BIOM_PLT01_20240816 due to potential high analytical bias. (J+, LCH)
  - WSP J+ qualified the detected PFDS results from samples E-A-BIOK_PLT01_20240816, E-A-BIOM_PLT01_20240816, and E-A-BIOK_PLT02_20240816 due to potential high analytical bias. (J+, LCH)
  - PFTrDA, PFDS, and 11Cl-PF3OUdS were not detected in the remaining associated samples and data usability is not adversely affected by potential high analytical bias.

– PFDS (168%), perfluorododecanesulfonic acid (PFDoDS [167%]), PFMBA (38%), and 11Cl-PF3OUdS (183%) recoveries were outside limits in the LLLCS associated with the extraction of samples E-A-BIOK_PLT01_20240816, E-A-BIOK_PLT02_20240816, E-A-BIOL-PLT01_20240815, E-A-BIOM_PLT01_20240816, E-A-BION_PLT01_20240815, E-A-BIOS_PLT01_20240817, E-A-BIOV_PLT01_20240815, and E-A-BIOX_PLT01_20240813. Data limitations are summarized below.

  - WSP J+ qualified the detected PFDoDS results from samples E-A-BIOK_PLT01_20240816 and E-A-BIOK_PLT02_20240816 due to potential high analytical bias. (J+, LCH)
  - The PFDS and PFMBA results from the associated samples were previously qualified due to low or high LCS recoveries and the data were not further qualified due to low or high LLLCS recoveries.
  - PFTrDA, PFDoDS, and 11Cl-PF3OUdS were not detected in the remaining associated samples and data usability is not adversely affected by potential high analytical bias.

– PFTrDA (167%), PFDoDS (174%), PFMBA (35%), 9Cl-PF3ONS (151%), and 11Cl-PF3OUdS (188%) recoveries were outside limits in the LLLCS associated with the extraction of samples E-T-BIOC_PLT01_20240815, E-T-BIOC_PLT02_20240815, E-T-BIOD_PLT01_20240815, E-T-BIOD_PLT02_20240815, E-T-BIOG_PLT01_20240817, E-T-BIOG_PLT02_20240817, E-T-BIOH_PLT01_20240817, E-T-BIOH_PLT02_20240817, and E-T-BIOM_PLT01_20240815. Data limitations are summarized below.

  - The PFMBA results from the associated samples were previously UJ qualified due to low LCS recovery and the data were not further qualified due to low LLLCS recovery.
  - PFTrDA, PFDoDS, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

- 9Cl-PF3ONS recovery was high at 180% in the LLLCS associated with the extraction of samples E-A-BIOB_PLT01_20240815, E-A-BIOC_PLT01_20240816, E-A-BIOD_PLT01_20240817, E-A-BIOE_PLT01_20240818, E-A-BIOF_PLT01_20240816, E-A-BIOG_PLT01_20240817, E-A-BIOH_PLT01_20240817, E-A-BIOI_PLT01_20240817, E-A-BIOJ_PLT01_20240816, and E-T-BIOQ_PLT01_20240816. 9Cl-PF3ONS was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

7.1.11 MATRIX SPIKE ACCURACY AND PRECISION

Batelle performed MS and/or MSD analyses on samples E-A-BIOR_INV02_20240817, E-A-BIOT_FSH01_20240813, E-A-BIOW_PLT01_20240814, E-A-BIOX_FSH01_20240813, E-A-BIOX_INV01_20240813, E-A-BIOX_PLT01_20240813, E-T-BIOE_PLT01_20240819, and E-T-BIOH_PLT02_20240817. Recoveries were within the method-specified limits and RPDs between MS and MSD results were less than the QAPP-specified maxima of 30%, with the following exceptions:

- PFOS (0%, MS) and 3-perfluoropentyl propanoic acid (5:3 FTCA [182%, 153%]) recoveries were outside limits in the MS and/or MSD performed on sample E-A-BIOW_PLT01_20240814. Additionally, the RPD between PFOS results was high at 200%. Data limitations are summarized below.
  - WSP J qualified the detected PFOS result from the associated sample due to potential analytical imprecision. (J, MSD)
  - PFOS was detected in the unspiked native sample at a concentration greater than four times the spike concentration and data usability cannot be assessed based on MS recoveries.
  - 5:3 FTCA was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
- PFOS (35%, MS) and 5:3 FTCA (178%, 162%) recoveries were outside limits in the MS and/or MSD performed on sample E-A-BIOX_INV01_20240813. Additionally, the RPD between PFOS results was high at 69%. Data limitations are summarized below.
  - WSP J- qualified the detected PFOS result from the associated sample due to potential low analytical bias. (J-, MSL)
  - WSP J+ qualified the detected 5:3 FTCA result from the associated sample due to potential high analytical bias. (J+, MSH)
  - WSP J qualified the detected PFOS result from the associated sample due to potential analytical imprecision. (J, MSD)
- Perfluorohexanesulfonic acid (PFHxS) and PFDoDS recoveries were low at 59% and 19%, respectively in the MS performed on sample E-A-BIOR_INV02_20240817. Additionally, the RPD between 3-perfluoropropyl propanoic acid (3:3 FTCA) results was high at 36%. Data limitations are summarized below.
  - WSP J- qualified the detected and UJ qualified the non-detect PFHxS and PFDoDS results from the associated sample due to potential low analytical bias. (J-/UJ, MSL)
  - 3:3 FTCA was not detected in the unspiked native sample and data usability is not adversely affected by potential analytical imprecision.
- PFTrDA (154%, MS), PFOS (33%, 624%), PFDoDS (22%, 21%), 6:2 fluorotelomer sulfonic acid (FTS [59%, MS]), 4,8-dioxa-3H-perfluorononanoic acid (ADONA [51%, MSD]), and 9Cl-PF3ONS (203%, 186%) recoveries were outside limits in the MS and/or MSD performed on sample E-A-BIOT_FSH01_20240813. Additionally, the RPD between PFOS results was high at 180%. Data limitations are summarized below.
  - WSP J+ qualified the detected PFTrDA result from the associated sample due to potential high analytical bias. (J+, MSH)
  - WSP J- qualified the detected and UJ qualified the non-detect 6:2 FTS, PFDoDS, and ADONA results from the associated sample due to potential low analytical bias. (J-/UJ, MSL)

- WSP J qualified the detected PFOS result from the associated sample due to potential analytical imprecision. (J, MSD)
- 9Cl-PF3ONS was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
- PFOS was detected in the unspiked native sample at a concentration greater than four times the spike concentration and data usability cannot be assessed based on MS recoveries.

– PFTrDA (196%, MS), perfluoropentanesulfonic acid (PFPeS [56%, 59%]), PFOS (413%, 661%), PFDoDS (18%, 19%), ADONA (48%, 49%), and 9Cl-PF3ONS (171%, MSD) recoveries were outside limits in the MS and/or MSD performed on sample E-A-BIOX_FSH01_20240813. Additionally, RPDs between PFTrDA (39%), PFOS (46%), and 6:2 FTS (31%) results were high. Data limitations are summarized below.

- WSP J+ qualified the detected PFTrDA result from the associated sample due to potential high analytical bias. (J+, MSH)
- WSP J- qualified the detected and UJ qualified the non-detect PFDoDS, ADONA, and PFPeS results from the associated sample due to potential low analytical bias. (J-/UJ, MSL)
- WSP J qualified the detected PFOS, PFTrDA, and 6:2 FTS results from the associated sample due to potential analytical imprecision. (J, MSD)
- 9Cl-PF3ONS was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
- PFOS was detected in the unspiked native sample at a concentration greater than four times the spike concentration and data usability cannot be assessed based on MS recoveries.

– Perfluorobutanesulfonic acid (PFBS [26%, 33%]), PFDS (156%, MSD), PFPeS (47%, 49%), PFOS (48%, MSD), PFDoDS (149%, MS), ADONA (151%, MSD), PFMBA (46%, 57%), perfluoro-3-methoxypropanoic acid (PFMPA [179%, 156%]), nonafluoro-3,6-dioxaheptanoic acid (NFDHA [52%, MS]), 9Cl-PF3ONS (259%, MSD), perfluoro(2-ethoxyethane)sulfonic acid (PFEESA [49%, 42%]), and 3-perfluoroheptyl propanoic acid (7:3 FTCA [363%, 466%]) were outside limits in the MS and/or MSD performed on sample E-T-BIOH_PLT02_20240817. Additionally, RPDs between PFOS (39%), PFDS (38%), NFDHA (49%), and 9Cl-PF3ONS (75%) results were high. Data limitations are summarized below.

- WSP J- qualified the detected and UJ qualified the non-detect PFBS, PFPeS, PFOS, PFMBA, NFDHA, and PFEESA results from the associated sample due to potential low analytical bias. (J-/UJ, MSL)
- WSP J qualified the detected PFOS result from the associated sample due to potential analytical imprecision. (J, MSD)
- PFDS, PFDoDS, ADONA, PFMPA, and 9Cl-PF3ONS were not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias and/or potential analytical imprecision.

– PFBS (30%, 27%), PFDS (152%, MSD), PFDoDS (141%, MSD), PFMPA (572%, 587%), 11Cl-PF3OUdS (173%, MSD), 3:3 FTCA (344%, 339%), 5:3 FTCA (169%, 170%), and 7:3 FTCA (215%, MSD) recoveries were outside limits in the MS and/or MSD performed on sample E-A-BIOX_PLT01_20240813. Data limitations are summarized below.

- WSP UJ qualified the non-detect PFBS result from the associated sample due to potential low analytical bias. (UJ, MSL)
- PFDS, PFDoDS, PFMPA, 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, and 7:3 FTCA were not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.

– ADONA (49%, MSD) and 11Cl-PF3OUdS (192%, 172%) recoveries were outside limits in the MS and/or MSD performed on sample E-T-BIOE_PLT01_20240819. Data limitations are summarized below.

- WSP UJ qualified the non-detect ADONA result from the associated sample due to potential low analytical bias. (UJ, MSL)

- 11Cl-PF3OUdS was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.

7.1.12 LABORATORY DUPLICATE PRECISION

Batelle performed duplicate analyses on samples E-A-BIOW_PLT01_20240814, E-A-BIOZ_INV02_20240813, E-A-BIOR_INV02_20240817, E-A-BIOX_FSH01_20240813, E-T-BIOH_PLT02_20240817, E-A-BIOJ_PLT01_20240816, E-A-BIOX_PLT01_20240813, E-T-BIOB_PLT01_20240819, and E-T-BIOE_PLT01_20240819. Precision between duplicate analyses was acceptable, with RPDs less than 30% or differences between analyte concentrations less than the LOQ.

7.1.13 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the method-specified limits, with the following exceptions:

- Recoveries of the EISs $^{13}C_8$-PFOSA (13%) and $^{13}C_2$-perfluorododecanoic acid (PFDoDA) were low at 13% and 21%, respectively, in the analysis of sample E-T-BIOO_PLT01_20240814. WSP UJ qualified the non-detect PFOSA, PFDoDA, and PFTrDA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recovery of the EIS $^{13}C_2$-PFDoDA was low at 33% in the analysis of sample E-A-BIOR_PLT02_20240814. WSP UJ qualified the non-detect PFDoDA and PFTrDA results from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of the EIS d_9-N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) was extremely low at 3% in the analysis of sample E-A-BIOO_INV01_20240813. WSP R qualified and rejected the non-detect NEtFOSE result from the associated sample due to extremely low EIS recovery. (R, EISL)
- Recovery of the EIS $^{13}C_8$-PFOSA was high at 187% in the analysis of sample E-A-BIOQ_FSH01_20240815. WSP J- qualified the detected PFOSA result from the associated sample due to high EIS recovery. (J-, EISH)
- Recoveries of the EISs $^{13}C_7$-perfluoroundecanoic acid (PFUnA [220%]), $^{13}C_2$-6:2 FTS (305%), and $^{13}C_2$-8:2 FTS (409%) were high in the analysis of sample E-T-BIOD_PLT01_20240815. PFUnA, 6:2 FTS, and 8:2 FTS were not detected in the associated sample and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EISs $^{13}C_3$-PFBS and $^{13}C_3$-hexafluoropropylene oxide dimer acid (HFPO-DA) were low at 23% and 13%, respectively, in the analysis of sample E-T-BIOH_PLT01_20240817. WSP UJ qualified the non-detect PFBS, HFPO-DA, ADONA, 11Cl-PF3OUdS, and 9Cl-PF3ONS results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-8:2 FTS and $^{13}C_3$-HFPO-DA were outside limits at 213% and 6%, respectively, in the analysis of sample E-T-BIOH_PLT02_20240817. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect HFPO-DA, ADONA, 11Cl-PF3OUdS, and 9Cl-PF3ONS results from the associated sample due to extremely low EIS recovery. (R, EISL)
  - 8:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_5$-perfluoropentanoic acid (PFPeA [212%]), $^{13}C_4$-perfluoroheptanoic acid (PFHpA [242%]), and $^{13}C_2$-6:2 FTS (310%) were high in the analysis of sample E-T-BIOQ_PLT01_20240816. PFPeA, PFHpA, 6:2 FTS, PFMPA, PFMBA, and 3:3 FTCA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recovery of the EIS $^{13}C_4$-PFHpA was high at 159% in the analysis of sample E-A-BIOE_PLT01_20240818. PFHpA was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_2$-PFDoDA and d_7-N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) were low at 22% and 4%, respectively, in the analysis of sample E-A-BIOF_PLT01_20240816. Data limitations are summarized below.

  - WSP R qualified and rejected the non-detect NMeFOSE result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect PFDoDA and PFTrDA results from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs d_5-N-ethyl perfluorooctanesulfonamide (NEtFOSA), d_7-NMeFOSE, and d_9-NEtFOSE were all extremely low at 4% in the analysis of sample E-A-BIOG_PLT01_20240817. WSP R qualified and rejected the non-detect NEtFOSA, NMeFOSE, and NEtFOSE results from the associated sample due to extremely low EIS recoveries. (R, EISL)
- Recoveries of the EISs $^{13}C_3$-PFBS (24%), $^{13}C_4$-PFHpA (184%), $^{13}C_8$-PFOS (178%), and d_5-N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA [368%]) were outside limits in the analysis of sample E-A-BIOJ_PLT01_20240816. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFBS result from the associated sample due to low EIS recovery. (UJ, EISL)
  - WSP J- qualified the detected PFOS result from the associated sample due to high EIS recovery. (J-, EISH)
  - PFHpA, PFDS, PFDoDS, perfluoroheptanesulfonic acid, perfluorononanesulfonic acid, and NEtFOSAA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recovery of the EIS $^{13}C_4$-PFHpA was high at 153% in the analysis of sample E-A-BIOV_PLT01_20240815. PFHpA was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-PFDoDA was low at 12% in the analysis of sample E-A-BIOCS_PLT01_20240819. WSP UJ qualified the non-detect PFDoDA and PFTrDA results from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of the EISs $^{13}C_4$-PFHpA and d_5-NEtFOSAA were low at 17% and 23%, respectively, in the analysis of sample E-T-BIOB_PLT01_20240819. WSP UJ qualified the non-detect PFHpA and NEtFOSAA results from the associated samples due to low EIS recoveries. (UJ, EISL)
- Recovery of the EIS $^{13}C_3$-HFPO-DA was high at 262% in the analysis of sample E-A-BIOV_INV01_20240814. HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS were not detected in the associated sample and data usability is not adversely affected by high EIS recovery.

7.1.14 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exceptions:

- Recoveries of the NISs $^{13}C_3$-perfluorobutanoic acid (PFBA [29%]), $^{13}C_2$-perfluorohexanoic acid (PFHxA [7%]), $^{13}C_4$-perfluorooctanoic acid (PFOA [35%]), $^{13}C_5$-perfluorononanoic acid (PFNA [42%]), and $^{18}O_2$-PFHxS (37%) were low in the analysis of sample E-T-BIOQ_PLT01_20240816. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFMBA, PFEESA, PFHpA, PFHxA, PFMPA, and PFPeA results from the associated sample due to extremely low NIS recovery. (R, ISL)
  - WSP J qualified the detected PFBA result from the associated sample due to low NIS recovery. (J, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_2$-PFHxA (37%), $^{13}C_4$-PFOA (14%), $^{13}C_5$-PFNA (37%), and $^{13}C_2$-perfluorodecanoic acid (PFDA [35%]) were low in the analysis of sample E-T-BIOK_PLT01_20240814. Data limitations are summarized below.

  - WSP UJ qualified the non-detect PFOA result from the associated sample due to low NIS recovery. (UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

- Recoveries of the NISs $^{13}C_2$-PFHxA (32%), $^{13}C_4$-PFOA (14%), and $^{13}C_2$-PFDA (48%) were low in the analysis of sample E-T-BION_PLT01_20240814. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFOA result from the associated sample due to low NIS recovery. (UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_4$-PFOA and $^{13}C_5$-PFNA were low at 28% and 47%, respectively, in the analysis of sample E-T-BIOL_PLT01_20240814. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFOA result from the associated sample due to low NIS recovery. (UJ, ISL)
  - The remaining affected NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 24% in the analysis of sample E-A-BIOV_INV01_20240814. WSP J qualified the detected and UJ qualified the non-detect PFPeA, PFHxA, PFHpA, HFPO-DA, ADONA, 9Cl-PF3ONS, 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, NFDHA, PFEESA, PFMPA, and PFMBA results from the associated sample due to low NIS recovery. (J/UJ, ISL)
- Recoveries of the NISs $^{13}C_3$-PFBA (28%), $^{13}C_2$-PFHxA (19%), $^{13}C_4$-PFOA (39%), $^{13}C_5$-PFNA (36%), and $^{18}O_2$-PFHxS (38%) were low in the analysis of sample E-T-BIOC_PLT01_20240815. Data limitations are summarized below.
  - WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFBA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_3$-PFBA (32%), $^{13}C_2$-PFHxA (15%), $^{13}C_4$-PFOA (30%), $^{13}C_5$-PFNA (38%), and $^{18}O_2$-PFHxS (44%) were low in the analysis of sample E-T-BIOC_PLT02_20240815. Data limitations are summarized below.
  - WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_2$-PFHxA (18%), $^{13}C_4$-PFOA (41%), $^{13}C_5$-PFNA (45%), and $^{18}O_2$-PFHxS (39%) were low in the analysis of sample E-T-BIOD_PLT01_20240815. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_3$-PFBA (40%), $^{13}C_2$-PFHxA (11%), $^{13}C_4$-PFOA (23%), $^{13}C_5$-PFNA (31%), $^{13}C_2$-PFDA (44%), and $^{18}O_2$-PFHxS (36%) were low in the analysis of sample E-T-BIOD_PLT02_20240815. Data limitations are summarized below.

- WSP UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, PFOA, and PFPeA results from the associated sample due to low NIS recoveries. (UJ, ISL)
- The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

– Recoveries of the NISs $^{13}C_2$-PFHxA and $^{13}C_4$-PFOA were low at 18% and 34%, respectively, in the analysis of sample E-T-BIOG_PLT01_20240817. Data limitations are summarized below.

- WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)
- The remaining affected NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

– Recoveries of the NISs $^{13}C_3$-PFBA (30%), $^{13}C_2$-PFHxA (14%), $^{13}C_4$-PFOA (25%), $^{13}C_5$-PFNA (30%), $^{13}C_2$-PFDA (44%), and $^{18}O_2$-PFHxS (45%) were low in the analysis of sample E-T-BIOG_PLT02_20240817. Data limitations are summarized below.

- WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, PFOA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)
- The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

– Recovery of the NIS $^{13}C_2$-PFHxA was low at 19% in the analysis of sample E-T-BIOH_PLT01_20240817. WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)

– Recoveries of the NISs $^{13}C_2$-PFHxA (13%), $^{13}C_4$-PFOA (39%), $^{13}C_5$-PFNA (36%), $^{13}C_2$-PFDA (47%), and $^{13}C_4$-PFOS (43%) were low in the analysis of sample E-T-BIOH_PLT02_20240817. Data limitations are summarized below.

- WSP J qualified the detected and UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (J/UJ, ISL)
- The HFPO-DA, ADONA, 9Cl-PF3ONS, and 11Cl-PF3OUdS results from the associated sample were previously rejected due to extremely low EIS recovery and the data was not further qualified based on NIS recovery.
- The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

– Recovery of the NISs $^{13}C_2$-PFHxA and $^{13}C_2$-PFDA were low at 23% and 36%, respectively, in the analysis of sample E-T-BIOM_PLT01_20240815. Data limitations are summarized below.

- WSP UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (UJ, ISL)
- The remaining affected NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

– Recoveries of the NISs $^{13}C_3$-PFBA (26%), $^{13}C_2$-PFHxA (31%), and $^{13}C_4$-PFOS (44%) were low in the analysis of sample E-A-BIOC_PLT01_20240816. Data limitations are summarized below.

- WSP UJ qualified the non-detect PFBA result from the associated sample due to low NIS recovery. (UJ, ISL)

  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

- Recoveries of the NISs $^{13}C_3$-PFBA (49%), $^{13}C_2$-PFHxA (27%), and $^{13}C_4$-PFOS (39%) were low in the analysis of sample E-A-BIOH_PLT01_20240817. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_3$-PFBA and $^{13}C_2$-PFHxA were low at 31% and 24%, respectively, in the analysis of sample E-A-BIOS_PLT01_20240817. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 11Cl-PF3OUdS, 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, 9Cl-PF3ONS, ADONA, HFPO-DA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low NIS recoveries. (UJ, ISL)
  - The remaining affected NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_2$-PFHxA (30%), $^{13}C_4$-PFOA (33%), $^{13}C_5$-PFNA (47%), and $^{18}O_2$-PFHxS (28%) were low in the analysis of sample E-T-BIOB_PLT01_20240819. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFBS, PFPeS, PFHxS, 4:2FTS, 6:2FTS, and 8:2 FTS results from the associated sample due to low NIS recoveries. (UJ, ISL)
  - The remaining affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_4$-PFOA and $^{13}C_5$-PFNA were low at 41% and 22%, respectively, in the analysis of sample E-T-BIOE_PLT01_20240819. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFNA result from the associated sample due to low NIS recovery. (UJ, ISL)
  - The remaining affected NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_4$-PFOA was low at 45% in the analysis of sample E-T-BIOO_PLT01_20240814. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recoveries of the NISs $^{13}C_2$-PFHxA and $^{13}C_4$-PFOS were low at 41% and 44%, respectively, in the analysis of sample E-A-BIOJ_PLT01_20240816. The affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 33% in the analysis of sample E-A-BIOB_PLT01_20240815. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 32% in the analysis of sample E-A-BIOD_PLT01_20240817. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 46% in the analysis of sample E-A-BIOL-PLT01_20240815. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

- Recoveries of the NISs $^{13}C_4$-PFOA and $^{13}C_2$-PFDA were low at 48% and 46%, respectively, in the analysis of sample E-A-BIOO_INV01_20240813. The affected NIS recoveries were greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 46% in the analysis of sample E-A-BIOY_INV01_20240813. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_4$-PFOA was low at 48% in the analysis of sample E-A-BIOP_FSH01_20240813. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_4$-PFOA was low at 48% in the analysis of sample E-A-BIOT_FSH01_20240813. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 36% in the analysis of sample E-A-BIOV_PLT01_20240815. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 34% in the analysis of sample E-A-BIOX_PLT01_20240813. The NIS recovery was greater than or equal to 30% and per the DoD data validation guidelines, no data were qualified based on NIS recoveries between 30 and 50%.

7.1.15 ION RATIOS

Batelle I qualified data when ion transition ratios were outside the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV. WSP J qualified Batelle's I qualified results to indicate potential matrix interference or the presence of isomers in the sample with different ratios than present in the standard. (J, IAG)

7.1.16 STAGE 4 VALIDATION

WSP performed Stage 4 validation on samples E-A-BIOW_PLT01_20240814, E-A-BIOZ_PLT01_20240813, E-T-BIOK_PLT01_20240814, E-T-BION_PLT01_20240814, E-T-BIOO_PLT01_20240814, E-A-BIOQ_PLT01_20240814, E-A-BIOR_PLT02_20240814, E-T-BIOL_PLT01_20240814, E-A-BIOO_INV01_20240813, E-A-BIOP_INV01_20240814, E-A-BIOP_INV02_20240815, E-A-BIOQ_INV01_20240814, E-A-BIOR_INV01_20240815, E-A-BIOU_INV01_20240814, E-A-BIOV_INV01_20240814, and E-A-BIOX_INV01_20240813. The sample results were correctly calculated including mass or volume extracted and any dilution factors.

7.1.17 DATA REPORTING AND ANALYTICAL PROCEDURES

Batelle J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Batelle's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP did not collect field duplicates with the samples reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 2,960 target analyte results from the field sample during this validation. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 23 records (0.78%) due to extremely low EIS or NIS recoveries.
- J+: WSP J+ qualified 12 records (0.41%) due to detections in an associated calibration blank and/or high LCS or MS recoveries.
- J-: WSP J- qualified 12 records (0.41%) due to high EIS recoveries and/or low LCS or MS recoveries.
- J: WSP J qualified 232 records (7.8%) due to imprecision between MS and MSD results, low NIS recoveries, detected concentrations less than the LOQ, or ion transition ratios outside of expected limits.
- UJ: WSP UJ qualified 198 records (6.7%) due to high ISC recovery or low LCS, MS, EIS, and/or NIS recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 – Sample and Analysis Summary
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

Lab SDG	Field Sample Identification	Sample Collection Date	Laboratory Sample Identification	Note
24-0653	E-A-BIOW_PLT01_20240814	8/14/2024	C6642-FS	MS/MSD, lab duplicate, Stage 4
24-0653	E-A-BIOZ_PLT01_20240813	8/13/2024	C6644-FS	Stage 4
24-0653	E-T-BIOK_PLT01_20240814	8/14/2024	C6645-FS	Stage 4
24-0653	E-T-BION_PLT01_20240814	8/14/2024	C6646-FS	Stage 4
24-0653	E-T-BIOO_PLT01_20240814	8/14/2024	C6647-FS	Stage 4
24-0653	E-A-BIOQ_PLT01_20240814	8/14/2024	C6648-FS	Stage 4
24-0653	E-A-BIOR_PLT02_20240814	8/14/2024	C6649-FS	Stage 4
24-0653	E-T-BIOL_PLT01_20240814	8/14/2024	C6650-FS	Stage 4
24-0679	E-T-BIOC_PLT01_20240815	8/15/2024	C6772-FS	
24-0679	E-T-BIOC_PLT02_20240815	8/15/2024	C6773-FS	
24-0679	E-T-BIOD_PLT01_20240815	8/15/2024	C6774-FS	
24-0679	E-T-BIOD_PLT02_20240815	8/15/2024	C6775-FS	
24-0679	E-T-BIOG_PLT01_20240817	8/17/2024	C6776-FS	
24-0679	E-T-BIOG_PLT02_20240817	8/17/2024	C6777-FS	
24-0679	E-T-BIOH_PLT01_20240817	8/17/2024	C6778-FS	
24-0679	E-T-BIOH_PLT02_20240817	8/17/2024	C6779-FS	MS/MSD, lab duplicate
24-0679	E-T-BIOM_PLT01_20240815	8/15/2024	C6780-FS	
24-0680	E-T-BIOQ_PLT01_20240816	8/16/2024	C6781-FS	
24-0680	E-A-BIOB_PLT01_20240815	8/15/2024	C6782-FS	
24-0680	E-A-BIOC_PLT01_20240816	8/16/2024	C6783-FS	
24-0680	E-A-BIOD_PLT01_20240817	8/17/2024	C6784-FS	
24-0680	E-A-BIOE_PLT01_20240818	8/18/2024	C6785-FS	
24-0680	E-A-BIOF_PLT01_20240816	8/16/2024	C6786-FS	
24-0680	E-A-BIOG_PLT01_20240817	8/17/2024	C6787-FS	
24-0680	E-A-BIOH_PLT01_20240817	8/17/2024	C6788-FS	
24-0680	E-A-BIOI_PLT01_20240817	8/17/2024	C6789-FS	
24-0680	E-A-BIOJ_PLT01_20240816	8/16/2024	C6790-FS	Lab duplicate
24-0681	E-A-BIOK_PLT01_20240816	8/16/2024	C6791-FS	
24-0681	E-A-BIOK_PLT02_20240816	8/16/2024	C6792-FS	
24-0681	E-A-BIOL-PLT01_20240815	8/15/2024	C6793-FS	
24-0681	E-A-BIOM_PLT01_20240816	8/16/2024	C6794-FS	
24-0681	E-A-BION_PLT01_20240815	8/15/2024	C6795-FS	
24-0681	E-A-BIOS_PLT01_20240817	8/17/2024	C6796-FS	
24-0681	E-A-BIOV_PLT01_20240815	8/15/2024	C6797-FS	
24-0681	E-A-BIOX_PLT01_20240813	8/13/2024	C6798-FS	MS/MSD, lab duplicate
24-0668	E-A-BIOO_INV01_20240813	8/13/2024	C6866-FS	Stage 4
24-0668	E-A-BIOP_INV01_20240814	8/14/2024	C6867-FS	Stage 4
24-0668	E-A-BIOP_INV02_20240815	8/15/2024	C6868-FS	Stage 4
24-0668	E-A-BIOQ_INV01_20240814	8/14/2024	C6869-FS	Stage 4

Prepared by: AKN
Date: 2/3/25
Checked by:
Date:

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Lab SDG	Field Sample Identification	Sample Collection Date	Laboratory Sample Identification	Note
24-0668	E-A-BIOR_INV01_20240815	8/15/2024	C6870-FS	Stage 4
24-0668	E-A-BIOU_INV01_20240814	8/14/2024	C6871-FS	Stage 4
24-0668	E-A-BIOV_INV01_20240814	8/14/2024	C6872-FS	Stage 4
24-0668	E-A-BIOX_INV01_20240813	8/13/2024	C6873-FS	MS/MSD, Stage 4
24-0668	E-A-BIOX_INV02_20240813	8/13/2024	C6874-FS	
24-0668	E-A-BIOY_INV01_20240813	8/13/2024	C6875-FS	
24-0668	E-A-BIOZ_INV01_20240813	8/13/2024	C6876-FS	
24-0668	E-A-BIOZ_INV02_20240813	8/13/2024	C6877-FS	Lab duplicate
24-0668	E-A-BIOO_INV02_20240818	8/18/2024	C6878-FS	
24-0668	E-A-BIOR_INV02_20240817	8/17/2024	C6879-FS	MS/MSD, lab duplicate
24-0668	E-A-BIOS_INV01_20240817	8/17/2024	C6880-FS	
24-0668	E-A-BIOT_INV01_20240816	8/16/2024	C6881-FS	
24-0668	E-A-BIOW_INV01_20240815	8/15/2024	C6882-FS	
24-0668	E-A-BIOW_INV02_20240815	8/15/2024	C6883-FS	
24-0669	E-A-BIOM_FSH01_20240814	8/14/2024	C6884-FS	
24-0669	E-A-BION_FSH01_20240815	8/15/2024	C6885-FS	
24-0669	E-A-BIOP_FSH01_20240813	8/13/2024	C6886-FS	
24-0669	E-A-BIOQ_FSH01_20240815	8/15/2024	C6887-FS	
24-0669	E-A-BIOR_FSH01_20240814	8/14/2024	C6888-FS	
24-0669	E-A-BIOT_FSH01_20240813	8/13/2024	C6889-FS	MS/MSD
24-0669	E-A-BIOU_FSH01_20240814	8/14/2024	C6890-FS	
24-0669	E-A-BIOW_FSH01_20240814	8/14/2024	C6891-FS	
24-0669	E-A-BIOX_FSH01_20240813	8/13/2024	C6892-FS	MS/MSD, lab duplicate
24-0669	E-A-BIOX_FSH02_20240813	8/13/2024	C6893-FS	
24-0669	E-A-BIOY_FSH01_20240813	8/13/2024	C6894-FS	
24-0669	E-A-BIOZ_FSH01_20240813	8/13/2024	C6895-FS	
24-0669	E-A-BIOO_FSH01_20240818	8/18/2024	C6896-FS	
24-0669	E-A-BIOS_FSH01_20240817	8/17/2024	C6897-FS	
24-0669	E-A-BIOV_FSH01_20240815	8/15/2024	C6898-FS	
24-0697	E-A-BIOA_PLT01_20240820	8/20/2024	C6971-FS	
24-0697	E-A-BIOCS_PLT01_20240819	8/19/2024	C6972-FS	
24-0697	E-A-BIOPB_PLT01_20240819	8/19/2024	C6973-FS	
24-0697	E-T-BIOB_PLT01_20240819	8/19/2024	C6974-FS	Lab duplicate
24-0697	E-T-BIOE_PLT01_20240819	8/19/2024	C6975-FS	MS/MSD, lab duplicate
24-0697	E-A-BIOO_PLT02_20240818	8/18/2024	C6976-FS	

Note:
MS/MSD = matrix spike/matrix spike duplicate

Prepared by: AKN
Date: 2/3/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0653																24-0668					
			Location	E-A-BIOQ_PLT01		E-A-BIOR_PLT02		E-A-BIOW_PLT01		E-A-BIOZ_PLT01		E-T-BIOK_PLT01		E-T-BIOL_PLT01		E-T-BION_PLT01		E-T-BIOO_PLT01		E-A-BIOO_INV01		E-A-BIOO_INV02		E-A-BIOP_INV01	
			Sample Date	8/14/2024		8/14/2024		8/14/2024		8/13/2024		8/14/2024		8/14/2024		8/14/2024		8/14/2024		8/13/2024		8/18/2024		8/14/2024	
			Sample ID	E-A-BIOQ_PLT01_20240814		E-A-BIOR_PLT02_20240814		E-A-BIOW_PLT01_20240814		E-A-BIOZ_PLT01_20240813		E-T-BIOK_PLT01_20240814		E-T-BIOL_PLT01_20240814		E-T-BION_PLT01_20240814		E-T-BIOO_PLT01_20240814		E-A-BIOO_INV01_20240813		E-A-BIOO_INV02_20240818		E-A-BIOP_INV01_20240814	
			QC Code	N		N		N		N		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	2.19	J	0.516	U	1.59	J	2.56	J	0.606	J	0.607	J	0.658	J	0.562	J	15.5		2.55	U	1.75	U
		Perfluoropentanoic acid (PFPeA)	NG/G	1.33	U	0.498	U	6.57		3.85		0.545	U	3.9		8.53		0.74	U	1.32	J	2.45	U	1.69	U
		Perfluorohexanoic acid (PFHxA)	NG/G	0.914	U	0.341	U	0.892	U	1.21	U	0.374	U	0.349	U	0.379	U	0.507	U	33.4		1.68	U	1.16	U
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.864	U	0.323	U	0.843	U	1.15	U	0.354	U	0.33	U	0.359	U	0.479	U	7.95		0.898	J	1.09	U
		Perfluorooctanoic acid (PFOA)	NG/G	0.617	U	0.23	U	2.7		1.83		0.253	UJ	0.236	UJ	0.256	UJ	0.342	U	1260		2.66		3.15	
		Perfluorononanoic acid (PFNA)	NG/G	0.611	J	0.332	U	1.82		1.36		0.364	U	0.34	U	0.369	U	0.493	U	8.14		1.64	U	0.75	J
		Perfluorodecanoic acid (PFDA)	NG/G	0.963	U	0.359	U	0.725	J	1.28	U	0.394	U	0.368	U	0.4	U	0.534	U	1.42	U	1.77	U	1.22	U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.741	U	0.276	U	0.723	U	0.984	U	0.303	U	0.283	U	0.308	U	0.411	U	1.37	J	1.2	J	1.73	
		Perfluorododecanoic acid (PFDoA)	NG/G	0.593	U	0.221	UJ	0.578	U	0.787	U	0.242	U	0.226	U	0.246	U	0.329	UJ	0.536	J	0.702	J	0.878	J
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.963	U	0.359	UJ	0.94	U	1.28	U	0.394	U	0.368	U	0.4	U	0.534	UJ	0.958	J	1.77	U	0.955	J
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.765	U	0.286	U	0.747	U	1.02	U	0.313	U	0.292	U	0.318	U	0.425	U	1.13	U	1.41	U	0.969	U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.84	U	0.313	U	0.819	U	1.11	U	0.343	U	0.321	U	0.349	U	0.466	U	58.2		1.55	U	1.06	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.494	U	0.184	U	0.482	U	0.656	U	0.202	U	0.189	U	0.205	U	0.274	U	0.727	U	0.909	U	0.625	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.659	J	0.15	J	2.73		1.18	J	0.219	J	0.283	U	0.308	U	0.411	U	29.7		4.26		6.02	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.864	U	0.323	U	0.843	U	1.15	U	0.354	U	0.33	U	0.359	U	0.479	U	0.904	J	1.59	U	1.09	U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	34.7		1.47		69.1	J	55.3		0.442		0.368	U	0.4	U	0.534	U	69.6		31.7		56.8	
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.975	U	0.364	U	0.952	U	1.3	U	0.399	U	0.373	U	0.405	U	0.541	U	1.44	U	1.8	U	1.23	U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.815	U	0.304	U	0.795	U	1.08	U	0.333	U	0.311	U	0.338	U	0.452	U	1.2	U	1.5	U	1.03	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.469	U	0.175	U	0.458	U	0.623	U	0.192	U	0.179	U	0.195	U	0.26	U	0.691	U	0.864	U	0.594	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	3.26	U	1.22	U	3.18	U	4.33	U	1.33	U	1.25	U	1.35	U	1.81	U	4.8	U	6	U	4.13	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	2	U	0.747	U	1.95	U	2.66	U	0.818	U	0.764	U	0.831	U	1.11	U	21.6		3.68	U	2.53	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	1.98	U	0.737	U	1.93	U	2.62	U	0.808	U	0.755	U	0.821	U	1.1	U	9.11		3.64	U	2.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.395	U	0.147	U	0.386	U	0.525	U	0.162	U	0.151	U	0.164	U	0.219	UJ	0.582	U	1.88		1.89	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.247	U	0.0922	U	0.241	U	0.328	U	0.101	U	0.0943	U	0.103	U	0.137	U	0.364	U	0.455	U	0.313	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.84	U	0.313	U	0.819	U	1.11	U	0.343	U	0.321	U	0.349	U	0.466	U	1.24	U	1.55	U	1.06	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.914	U	0.341	U	0.892	U	1.21	U	0.374	U	0.349	U	0.379	U	0.507	U	1.35	U	1.68	U	1.16	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.938	U	0.35	U	0.916	U	1.25	U	0.384	U	0.358	U	0.39	U	0.521	U	2.37		1.73	U	1.19	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	4.72	U	1.76	U	4.6	U	6.26	U	1.93	U	1.8	U	1.96	U	2.62	U	6.95	U	8.68	U	5.97	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	4.94	U	1.84	U	4.82	U	6.56	U	2.02	U	1.89	U	2.05	U	2.74	U	0	R	9.09	U	6.25	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	2.86	U	1.07	U	2.8	U	3.8	U	1.17	U	1.09	U	1.19	U	1.59	U	3.77	J	5.27	U	3.63	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	2.22	U	0.829	U	2.17	U	2.95	U	0.909	U	0.849	U	0.923	U	1.23	U	3.27	U	4.09	U	2.81	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	1.7	U	0.636	U	1.66	U	2.26	U	0.697	U	0.651	U	0.708	U	0.945	U	2.51	U	3.14	U	2.16	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	1.33	U	0.498	U	1.7	J	1.36	J	0.545	U	0.509	U	0.554	U	0.74	U	1.96	U	2.45	U	1.69	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.519	U	0.194	U	0.506	U	0.689	U	0.212	U	0.198	U	0.215	U	0.288	U	0.764	U	0.955	U	0.656	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	3.09	U	1.15	U	3.01	U	4.1	U	1.26	U	1.18	U	1.28	U	1.71	U	4.55	U	5.68	U	3.91	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	2.94	U	1.1	U	2.87	U	3.9	U	1.2	U	1.12	U	1.22	U	1.63	U	4.33	U	5.41	U	3.72	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.864	U	0.323	U	0.843	U	1.15	U	0.354	U	0.33	U	0.359	U	0.479	U	1.27	U	1.59	U	1.09	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	1.21	U	0.452	U	1.18	U	1.61	U	0.495	U	0.462	U	0.503	U	0.671	U	1.78	U	2.23	U	1.53	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	16.9	U	6.3	U	16.5	U	22.4	U	6.91	U	6.45	U	7.02	U	9.37	U	24.9	U	31.1	U	21.4	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	9.14	U	3.41	U	8.92	U	12.1	U	3.74	U	3.49	U	3.79	U	5.07	U	13.5	U	16.8	U	11.6	U

Prepared by: AKN
Date: 2/25/25
Checked by: MLB
Date2/25/2025:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

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			SDG	24-0669								24-0679		
			Location	E-A-BIOT_FSH01	E-A-BIOU_FSH01	E-A-BIOV_FSH01	E-A-BIOW_FSH01	E-A-BIOX_FSH01	E-A-BIOX_FSH02	E-A-BIOY_FSH01	E-A-BIOZ_FSH01	E-T-BIOC_PLT01	E-T-BIOC_PLT02	E-T-BIOD_PLT01
			Sample Date	8/13/2024	8/14/2024	8/15/2024	8/14/2024	8/13/2024	8/13/2024	8/13/2024	8/13/2024	8/15/2024	8/15/2024	8/15/2024
			Sample ID	E-A-BIOT_FSH01_20240813	E-A-BIOU_FSH01_20240814	E-A-BIOV_FSH01_20240815	E-A-BIOW_FSH01_20240814	E-A-BIOX_FSH01_20240813	E-A-BIOX_FSH02_20240813	E-A-BIOY_FSH01_20240813	E-A-BIOZ_FSH01_20240813	E-T-BIOC_PLT01_20240815	E-T-BIOC_PLT02_20240815	E-T-BIOD_PLT01_20240815
			QC Code	N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	2.33 U	2.2 U	3.03 U	2.24 U	2.29 U	2.11 U	2.24 U	2.29 U	1.9 J	12.1	0.752 U
		Perfluoropentanoic acid (PFPeA)	NG/G	2.25 U	2.12 U	2.92 U	2.16 U	2.2 U	2.04 U	2.16 U	2.2 U	0.303 UJ	13.3 J	0.725 UJ
		Perfluorohexanoic acid (PFHxA)	NG/G	1.54 U	1.45 U	2 U	1.48 U	1.51 U	1.4 U	1.48 U	1.51 U	0.207 UJ	0.281 UJ	0.497 UJ
		Perfluoroheptanoic acid (PFHpA)	NG/G	1.46 U	1.37 U	1.89 U	1.4 U	1.43 U	1.32 U	1.4 U	1.43 U	0.196 UJ	0.266 UJ	0.47 UJ
		Perfluorooctanoic acid (PFOA)	NG/G	1.04 U	0.98 U	1.35 U	1.82	1.02 U	0.943 U	1 U	1.02 U	0.14 U	0.19 U	0.336 U
		Perfluorononanoic acid (PFNA)	NG/G	1.27 J	1.41 U	1.95 U	3.33	1.79	2.15	1.54 J	1.55 J	0.202 U	0.274 U	0.483 U
		Perfluorodecanoic acid (PFDA)	NG/G	4.17	2.69	1.39 J	6.41	5.61	6.57	4.33	5.08	0.218 U	0.297 U	0.523 U
		Perfluoroundecanoic acid (PFUnA)	NG/G	6.44	4.19	2.14 J	8.04	8.5	9.68	5.85	6.52	0.168 U	0.228 U	0.403 U
		Perfluorododecanoic acid (PFDoA)	NG/G	2.2	2.38	1.89 J	2.89	4.82	4.35	2.25	2.95	0.134 U	0.183 U	0.322 U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	5.68 J+	4.08	1.54 J	4.76	8.19 J+	5.08	5.1	6.3	0.218 U	0.297 U	0.523 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	1.29 U	1.22 U	1.68 U	1.24 U	2.27	1.16 J	1.12 J	1.42 J	0.174 U	0.236 U	0.416 U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	1.42 U	1.33 U	1.84 U	1.36 U	1.39 U	1.28 U	1.36 U	1.39 U	0.19 U	0.259 U	0.456 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.833 U	0.784 U	1.08 U	0.8 U	0.998 J-	0.755 U	0.8 U	0.816 U	0.112 U	0.152 U	0.268 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	2.93	4.4	11	22.5	11.3	6.34	10.1	3.31	3.79	3.42	0.403 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	1.46 U	1.37 U	1.19 J	3.16	2.11	2.03	1.42 J	1.37 J	0.196 U	0.266 U	0.47 U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	451 J	505	271	1240	1310 J	1340	981	1260	4.79	3.29	0.523 U
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.833 J	3.43	1.71 J	6.5	7.53	7.34	5.32	10.2	0.221 U	0.3 U	0.53 U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	1.34 J	2.61	3.23	6.99	7.16	6.77	4.81	8.14	0.185 U	0.251 U	0.443 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.754 J-	1.02 J	0.657 J	1.15 J	3.13 J-	1.59	1.47 J	1.7	0.106 U	0.144 U	0.255 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	5.5 U	5.18 U	7.14 U	5.28 U	5.39 U	4.98 U	5.28 U	5.39 U	0.739 U	1 U	1.77 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	3.38 UJ	3.18 U	4.38 U	3.24 U	3.31 U	3.06 U	3.24 U	3.31 U	0.454 U	0.616 U	1.09 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	3.33 U	3.14 U	6.91 J	6.95	5.48 J	4.04 J	2.83 J	1.74 J	0.448 U	0.608 U	1.07 U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.667 U	3.97	24.8	22.9	14.7	13.3	7.8	4.2 J	0.122 U	0.13 U	0.215 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.417 U	0.392 U	0.541 U	0.4 U	0.408 U	0.377 U	0.4 U	0.408 U	0.056 U	0.076 U	0.134 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	1.42 U	1.33 U	1.84 U	1.36 U	1.39 U	1.28 U	1.36 U	1.39 U	0.19 U	0.259 U	0.456 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	1.54 U	1.45 U	2 U	1.48 U	1.51 U	1.4 U	1.48 U	1.51 U	0.207 U	0.281 U	0.497 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	1.58 U	1.49 U	2.05 U	1.52 U	1.55 U	1.43 U	1.52 U	1.55 U	0.213 U	0.289 U	0.51 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	7.96 U	7.49 U	10.3 U	7.64 U	7.8 U	7.21 U	7.64 U	7.8 U	1.07 U	1.45 U	2.56 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	8.33 U	7.84 U	10.8 U	8 U	8.16 U	7.55 U	8 U	8.16 U	1.12 U	1.41 J	2.68 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	4.83 U	4.55 U	6.27 U	4.64 U	4.73 U	4.38 U	4.64 U	4.73 U	0.65 UJ	0.882 UJ	1.56 UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	3.75 UJ	3.53 U	4.86 U	3.6 U	3.67 UJ	3.4 U	3.6 U	3.67 U	0.504 UJ	0.684 UJ	1.21 UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	2.88 U	2.71 U	3.73 U	2.76 U	2.82 U	2.6 U	2.76 U	2.82 U	0.387 UJ	0.525 UJ	0.926 UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	2.25 U	2.12 U	2.92 U	2.16 U	2.2 U	2.04 U	2.16 U	2.2 U	0.303 UJ	0.411 UJ	0.725 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.875 U	0.824 U	1.14 U	0.84 U	0.857 U	0.792 U	0.84 U	0.857 U	0.118 UJ	0.16 UJ	0.282 UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	5.21 U	4.9 U	6.76 U	5 U	5.1 U	4.72 U	5 U	5.1 U	0.7 UJ	0.951 UJ	1.68 UJ
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	4.96 U	4.67 U	6.43 U	4.76 U	4.86 U	4.49 U	4.76 U	4.86 U	0.667 UJ	0.905 UJ	1.6 UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	1.46 U	1.37 U	1.89 U	1.4 U	1.43 U	1.32 U	1.4 U	1.43 U	0.196 UJ	0.266 UJ	0.47 UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	2.04 U	1.92 U	2.65 U	1.96 U	2 U	1.85 U	1.96 U	2 U	0.275 UJ	0.373 UJ	0.658 UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	28.5 U	26.8 U	37 U	27.4 U	27.9 U	25.8 U	27.4 U	27.9 U	3.83 UJ	5.2 UJ	9.18 UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	15.4 U	14.5 U	37 J	20.8 J	14.3 J	15.1 J	8.99 J	10.2 J	2.07 UJ	2.81 UJ	4.97 UJ

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Table 2 – Summary of Analytical Results
Data Validation Report
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Former Loring Air Force Base, Limestone, Maine

				SDG	24-0679						24-0680				
				Location	E-T-BIOD_PLT02	E-T-BIOG_PLT01	E-T-BIOG_PLT02	E-T-BIOH_PLT01	E-T-BIOH_PLT02	E-T-BIOM_PLT01	E-A-BIOB_PLT01	E-A-BIOC_PLT01	E-A-BIOD_PLT01	E-A-BIOE_PLT01	E-A-BIOF_PLT01
				Sample Date	8/15/2024	8/17/2024	8/17/2024	8/17/2024	8/17/2024	8/15/2024	8/15/2024	8/16/2024	8/17/2024	8/18/2024	8/16/2024
				Sample ID	E-T-BIOD_PLT02_20240815	E-T-BIOG_PLT01_20240817	E-T-BIOG_PLT02_20240817	E-T-BIOH_PLT01_20240817	E-T-BIOH_PLT02_20240817	E-T-BIOM_PLT01_20240815	E-A-BIOB_PLT01_20240815	E-A-BIOC_PLT01_20240816	E-A-BIOD_PLT01_20240817	E-A-BIOE_PLT01_20240818	E-A-BIOF_PLT01_20240816
				QC Code	N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	17.2	195	62.2	8.7	6.56	0.659 U	0.602 U	0.882 UJ	0.83 U	0.957 U	0.421 U
		Perfluoropentanoic acid (PFPeA)	NG/G	0.374 UJ	227 J	50.4 J	6.78 J	2.84 J	0.635 UJ	0.581 U	0.85 U	0.8 U	0.923 U	0.406 U
		Perfluorohexanoic acid (PFHxA)	NG/G	0.256 UJ	34.1 J	9.36 J	13.9 J	0.287 UJ	0.435 UJ	0.398 U	0.583 U	0.548 U	0.632 U	0.278 U
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.242 UJ	8.84 J	0.217 UJ	0.22 UJ	0.271 UJ	0.412 UJ	0.376 U	0.551 U	0.519 U	0.598 U	0.263 U
		Perfluorooctanoic acid (PFOA)	NG/G	0.173 UJ	6.6	5.23 J	3.01	0.194 U	0.294 U	0.269 U	0.394 U	0.37 U	0.584 J	0.135 J
		Perfluorononanoic acid (PFNA)	NG/G	0.249 U	2.23	6.89 J	1.18	0.279 U	0.424 U	0.387 U	0.482 J	0.533 U	0.621 J	0.271 U
		Perfluorodecanoic acid (PFDA)	NG/G	0.27 U	0.406 J	0.242 U	0.164 J	0.302 U	0.459 U	0.419 U	0.614 U	0.578 U	0.667 U	0.293 U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.208 U	0.364 U	0.186 U	0.189 U	0.233 U	0.353 U	0.323 U	0.472 U	0.444 U	0.513 U	0.226 U
		Perfluorododecanoic acid (PFDoA)	NG/G	0.166 U	0.291 U	0.149 U	0.151 U	0.186 U	0.282 U	0.258 U	0.378 U	0.356 U	0.41 U	0.18 UJ
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.27 U	0.473 U	0.242 U	0.245 U	0.302 U	0.459 U	0.419 U	0.614 U	0.578 U	0.667 U	0.293 UJ
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.215 U	0.376 U	0.193 U	0.195 U	0.24 U	0.365 U	0.333 U	0.488 U	0.459 U	0.53 U	0.233 U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.235 U	1.24 J	0.716	0.214 UJ	0.264 UJ	0.4 U	0.366 U	0.535 U	0.504 U	0.581 U	0.256 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.138 U	1.13	0.878	0.306	0.155 UJ	0.235 U	0.215 U	0.315 U	0.296 U	0.342 U	0.15 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.208 U	36.6	17.3	53.9	0.839	0.353 U	0.323 U	0.472 U	0.673 J	0.642 J	0.226 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.242 U	0.818 J	0.217 U	0.741	0.271 U	0.412 U	0.376 U	0.551 U	0.519 U	0.598 U	0.263 U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	0.27 U	66.9	57	70	3.91 J-	0.459 U	0.788	1.09	3.48	11.5	1.96
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.273 U	0.304 J	0.159 J	0.224 J	0.306 U	0.465 U	0.425 U	0.622 U	0.585 U	0.675 U	0.297 U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.228 U	0.4 U	0.205 U	0.208 U	0.256 U	0.388 U	0.355 U	0.52 U	0.489 U	0.564 U	0.248 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.131 U	0.23 U	0.118 U	0.119 U	0.147 U	0.224 U	0.204 U	0.299 U	0.281 U	0.325 U	0.143 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	0.913 U	1.6 U	0.82 U	0.83 U	1.02 U	1.55 U	1.42 U	2.08 U	1.96 U	2.26 U	0.992 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	0.561 U	15.5	1.55	0.509 U	0.628 U	0.953 U	0.871 U	1.28 U	1.2 U	1.38 U	0.609 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.554 U	6.89	0.489 J	0.503 U	0.62 U	0.941 U	0.86 U	1.26 U	1.19 U	1.37 U	0.602 U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.111 U	0.538 J+	0.132 J	0.321	0.124 U	0.188 U	0.172 U	0.252 U	0.237 U	0.147 J	0.12 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.0692 U	0.121 U	0.0621 U	0.0629 U	0.0775 U	0.118 U	0.108 U	0.157 U	0.148 U	0.171 U	0.0752 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.235 U	0.412 U	0.211 U	0.214 U	0.264 U	0.4 U	0.366 U	0.535 U	0.504 U	0.581 U	0.256 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.256 U	0.448 U	0.23 U	0.233 U	0.287 U	0.435 U	0.398 U	0.583 U	0.548 U	0.632 U	0.278 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.263 U	0.461 U	0.236 U	0.239 U	0.295 U	0.447 U	0.409 U	0.598 U	0.563 U	0.65 U	0.286 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	1.32 U	2.32 U	1.19 U	1.2 U	1.48 U	2.25 U	2.05 U	3.01 U	2.83 U	3.26 U	0 R
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	1.38 U	2.42 U	1.24 U	1.26 U	1.55 U	2.35 U	2.15 U	3.15 U	2.96 U	3.42 U	1.5 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.803 UJ	1.41 UJ	0.72 UJ	0.73 UJ	0 R	1.36 UJ	1.25 U	1.83 U	1.72 U	1.98 U	0.872 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.623 UJ	1.09 UJ	0.559 UJ	0.566 UJ	0 R	1.06 UJ	0.968 U	1.42 U	1.33 U	1.54 U	0.677 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.478 UJ	0.836 UJ	0.429 UJ	0.434 UJ	0.535 UJ	0.812 UJ	0.742 U	1.09 U	1.02 U	1.18 U	0.519 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.374 UJ	0.655 UJ	0.335 UJ	0.34 UJ	0.419 UJ	0.635 UJ	0.581 UJ	0.85 UJ	0.8 UJ	1.2 J-	0.406 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.145 UJ	0.255 UJ	0.13 UJ	0.132 UJ	0.163 UJ	0.247 UJ	0.226 U	0.331 U	0.311 U	0.359 U	0.158 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	0.865 UJ	1.52 UJ	0.776 UJ	0.786 UJ	0 R	1.47 UJ	1.34 U	1.97 U	1.85 U	2.14 U	0.94 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.824 UJ	1.44 UJ	0.739 UJ	0.748 UJ	0 R	1.4 UJ	1.28 U	1.87 U	1.76 U	2.03 U	0.895 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.242 UJ	0.424 UJ	0.217 UJ	0.22 UJ	0.271 UJ	0.412 UJ	0.376 U	0.551 U	0.519 U	0.598 U	0.263 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.339 UJ	0.594 UJ	0.304 UJ	0.308 UJ	0.38 UJ	0.576 UJ	0.527 U	0.772 U	0.726 U	0.838 U	0.368 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	4.73 UJ	8.29 UJ	4.25 UJ	4.3 UJ	5.3 UJ	8.05 UJ	7.35 U	10.8 U	10.1 U	11.7 U	5.14 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	2.56 UJ	4.48 UJ	2.3 UJ	2.33 UJ	2.87 UJ	4.35 UJ	3.98 U	5.83 U	5.48 U	6.32 U	2.78 U

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Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

				SDG	24-0680					24-0681					
				Location	E-A-BIOG_PLT01	E-A-BIOH_PLT01	E-A-BIOI_PLT01	E-A-BIOJ_PLT01	E-T-BIOQ_PLT01	E-A-BIOK_PLT01	E-A-BIOK_PLT02	E-A-BIOL_PLT01	E-A-BIOM_PLT01	E-A-BION_PLT01	E-A-BIOS_PLT01
				Sample Date	8/17/2024	8/17/2024	8/17/2024	8/16/2024	8/16/2024	8/16/2024	8/16/2024	8/15/2024	8/16/2024	8/15/2024	8/17/2024
				Sample ID	E-A-BIOG_PLT01_20240817	E-A-BIOH_PLT01_20240817	E-A-BIOI_PLT01_20240817	E-A-BIOJ_PLT01_20240816	E-T-BIOQ_PLT01_20240816	E-A-BIOK_PLT01_20240816	E-A-BIOK_PLT02_20240816	E-A-BIOL_PLT01_20240815	E-A-BIOM_PLT01_20240816	E-A-BION_PLT01_20240815	E-A-BIOS_PLT01_20240817
				QC Code	N	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.974 U	0.634 J	0.737 U	1.19 U	1.06 J	3.23	3.04	1.71 J	0.533 U	1.48 J	1.15 J
		Perfluoropentanoic acid (PFPeA)	NG/G	0.939 U	0.401 UJ	0.711 U	1.15 U	0 R	4.09	4.39	1.44 U	0.514 U	0.947 U	0.563 UJ
		Perfluorohexanoic acid (PFHxA)	NG/G	0.643 U	0.275 UJ	0.487 U	0.787 U	0 R	1.2	0.587 U	0.987 U	1.25	0.649 U	0.385 UJ
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.609 U	0.26 UJ	0.461 U	0.745 U	0 R	0.568 J	0.772	0.933 U	0.681	0.614 U	0.365 UJ
		Perfluorooctanoic acid (PFOA)	NG/G	0.724	0.186 U	0.329 U	0.532 U	0.217 U	2.2	2.98	1.9	3.15	0.615 J	0.26 U
		Perfluorononanoic acid (PFNA)	NG/G	1.04	0.268 U	0.474 U	0.727 J	0.313 U	0.576 J	0.863	0.675 J	1	0.335 J	0.375 U
		Perfluorodecanoic acid (PFDA)	NG/G	0.475 J	0.29 U	0.513 U	0.83 U	0.339 U	0.671	0.872	1.04 U	0.223 J	0.684 U	0.406 U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.522 U	0.223 U	0.395 U	0.638 U	0.261 U	0.599 J	0.598 J	0.8 U	0.357 J	0.526 U	0.313 U
		Perfluorododecanoic acid (PFDoA)	NG/G	0.417 U	0.178 U	0.316 U	0.511 U	0.209 U	0.369 U	0.537 J	0.64 U	0.229 U	0.421 U	0.25 U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.678 U	0.29 U	0.513 U	0.83 U	0.339 U	0.6 U	0.619 U	1.04 U	0.379 J+	0.684 U	0.406 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.539 U	0.23 U	0.408 U	0.66 U	0.27 U	0.477 U	0.492 U	0.827 U	0.295 U	0.544 U	0.323 U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.591 U	0.253 U	0.447 U	0.723 UJ	0.296 U	0.523 U	0.54 U	0.907 U	0.324 U	0.596 U	0.354 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.348 U	0.149 U	0.263 U	0.426 U	0.174 U	0.986	1.05	0.533 U	0.825	0.351 U	0.208 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.522 U	0.223 U	0.395 U	0.638 U	0.261 U	7.28	11.1	6.85	7.19	1.13	0.313 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.609 U	0.26 U	0.461 U	0.745 U	0.304 U	0.884	1.44	0.817 J	0.333 U	0.614 U	0.365 U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	19.6	1.36	0.314 J	3.61 J-	0.339 U	193	260	49.8	301	29.4	0.334 J
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.687 U	0.294 U	0.52 U	0.84 U	0.343 U	1.34	1.64	1.05 U	1.58	0.693 U	0.411 U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.574 U	0.245 U	0.434 U	0.702 U	0.287 U	4.12 J+	5.34 J+	0.88 U	4.14 J+	0.579 U	0.344 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.33 U	0.141 U	0.25 U	0.404 U	0.165 U	4.23 J+	3.1 J+	0.507 U	0.181 U	0.333 U	0.198 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	2.3 U	0.981 U	1.74 U	2.81 U	1.15 U	2.03 U	2.1 U	3.52 U	1.26 U	2.32 U	1.38 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	1.41 U	0.602 U	1.07 U	1.72 U	0.704 U	2.39 J	3.15	2.16 U	3.84	1.42 U	0.844 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	1.39 U	0.595 U	1.05 U	1.7 U	0.696 U	16.5	17.2	2.13 U	11.4	1.4 U	0.833 U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.278 U	0.119 U	0.211 U	0.34 U	0.139 U	11	11.1	0.621 J	13	0.23 J	0.167 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.174 U	0.0743 U	0.132 U	0.213 U	0.087 U	0.154 U	0.159 U	0.267 U	0.0952 U	0.175 U	0.104 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0 R	0.253 U	0.447 U	0.723 U	0.296 U	0.523 U	0.54 U	0.907 U	0.324 U	0.596 U	0.354 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.643 U	0.275 U	0.487 U	0.787 U	0.322 U	0.569 U	0.587 U	0.987 U	1.39	0.649 U	0.385 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.661 U	0.283 U	0.5 U	0.809 U	0.33 U	0.585 U	0.603 U	1.01 U	0.362 U	0.667 U	0.396 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	0 R	1.42 U	2.51 U	4.06 U	1.66 U	2.94 U	3.03 U	5.09 U	6.28	3.35 U	1.99 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	0 R	1.49 U	2.63 U	4.26 U	1.74 U	3.08 U	3.17 U	5.33 U	1.9 U	3.51 U	2.08 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	2.02 U	0.862 UJ	1.53 U	2.47 U	0 R	1.78 U	1.84 U	3.09 U	1.1 U	2.04 U	1.21 UJ
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	1.57 U	0.669 UJ	1.18 U	1.91 U	0 R	1.38 U	1.43 U	2.4 U	0.857 U	1.58 U	0.938 UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	1.2 U	0.513 UJ	0.908 U	1.47 U	0 R	1.06 U	1.1 U	1.84 U	0.657 U	1.21 U	0.719 UJ
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.939 UJ	0.401 UJ	0.711 UJ	1.15 UJ	0 R	2.51 J-	3.37 J-	1.44 UJ	0.514 UJ	0.607 J-	0.563 UJ
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.365 U	0.156 UJ	0.276 U	0.447 U	0 R	0.323 U	0.333 U	0.56 U	0.2 U	0.368 U	0.219 UJ
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	2.17 U	0.929 UJ	1.64 U	2.66 U	0 R	1.92 UJ	1.98 UJ	3.33 U	1.19 UJ	2.19 U	1.3 UJ
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	2.07 U	0.885 UJ	1.57 U	2.53 U	0 R	1.83 U	1.89 U	3.17 U	1.13 U	2.09 U	1.24 UJ
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.609 U	0.26 UJ	0.461 U	0.745 U	0 R	0.538 U	0.556 U	0.933 U	0.333 U	0.614 U	0.365 UJ
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.852 U	0.364 UJ	0.645 U	1.04 U	0 R	0.754 U	0.778 U	1.31 U	0.467 U	0.86 U	0.51 UJ
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	11.9 U	5.09 UJ	9 U	14.6 U	0 R	10.5 U	10.9 U	18.2 U	6.51 U	12 U	7.13 UJ
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	6.43 U	2.75 UJ	4.87 U	7.87 U	0 R	5.69 U	5.87 U	9.87 U	3.48 J	6.49 U	3.85 UJ

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Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0681		24-0697													
			Location	E-A-BIOV_PLT01		E-A-BIOX_PLT01		E-A-BIOA_PLT01		E-A-BIOCS_PLT01		E-A-BIOO_PLT02		E-A-BIOPB_PLT01		E-T-BIOB_PLT01		E-T-BIOE_PLT01	
			Sample Date	8/15/2024		8/13/2024		8/20/2024		8/19/2024		8/18/2024		8/19/2024		8/19/2024		8/19/2024	
			Sample ID	E-A-BIOV_PLT01_20240815		E-A-BIOX_PLT01_20240813		E-A-BIOA_PLT01_20240820		E-A-BIOCS_PLT01_20240819		E-A-BIOO_PLT02_20240818		E-A-BIOPB_PLT01_20240819		E-T-BIOB_PLT01_20240819		E-T-BIOE_PLT01_20240819	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	1.21	J	1.26	J	0.599	J	0.674	J	0.868	U	1.23	U	0.613	J	1.85	J
		Perfluoropentanoic acid (PFPeA)	NG/G	0.85	U	0.551	U	0.688	U	2.86		0.837	U	1.19	U	1.35		0.758	J
		Perfluorohexanoic acid (PFHxA)	NG/G	0.583	U	0.378	U	0.471	U	0.556	U	0.574	U	0.813	U	0.247	U	0.521	U
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.551	U	0.357	U	0.446	U	0.526	U	0.543	U	0.769	U	0.234	UJ	0.493	U
		Perfluorooctanoic acid (PFOA)	NG/G	1.42		0.255	U	0.318	U	0.376	U	0.248	J	0.549	U	0.167	U	0.352	U
		Perfluorononanoic acid (PFNA)	NG/G	0.706		0.367	U	0.459	U	0.541	U	0.302	J	0.791	U	0.241	U	0.507	UJ
		Perfluorodecanoic acid (PFDA)	NG/G	0.614	U	0.398	U	0.497	U	0.586	U	0.605	U	0.857	U	0.261	U	0.549	U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.472	U	0.306	U	0.382	U	0.451	U	0.465	U	0.659	U	0.201	U	0.423	U
		Perfluorododecanoic acid (PFDoA)	NG/G	0.378	U	0.245	U	0.306	U	0.361	UJ	0.372	U	0.527	U	0.161	U	0.338	U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.614	U	0.398	U	0.497	U	0.586	UJ	0.605	U	0.857	U	0.261	U	0.549	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.488	U	0.316	U	0.395	U	0.466	U	0.481	U	0.681	U	0.207	U	0.437	U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.535	U	0.347	UJ	0.433	U	0.511	U	0.527	U	0.747	U	0.227	UJ	0.769	
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.315	U	0.204	U	0.255	U	0.301	U	0.31	U	0.44	U	0.134	UJ	0.18	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	2.17		0.306	J	0.359	J	0.451	U	0.533	J	0.659	U	0.201	UJ	2.59	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.551	U	0.357	U	0.446	U	0.526	U	0.543	U	0.769	U	0.234	U	0.493	U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	30		0.682		1.51		0.586	U	13.2		0.857	U	0.261	U	1.98	
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.622	U	0.403	U	0.503	U	0.594	U	0.612	U	0.868	U	0.264	U	0.556	U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.52	U	0.337	U	0.42	U	0.496	U	0.512	U	0.725	U	0.221	U	0.465	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.299	U	0.194	U	0.242	U	0.286	U	0.295	U	0.418	U	0.127	U	0.268	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	2.08	U	1.35	U	1.68	U	1.98	U	2.05	U	2.9	U	0.883	UJ	1.86	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	1.28	U	0.827	U	1.03	U	1.22	U	1.26	U	1.78	U	0.542	UJ	1.14	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	1.56	J	0.816	U	1.02	U	1.2	U	1.24	U	1.76	U	0.535	UJ	1.13	U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.819		0.0842	J	0.204	U	0.241	U	0.248	U	0.352	U	0.107	U	0.225	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.157	U	0.102	U	0.127	U	0.15	U	0.155	U	0.22	U	0.0669	U	0.141	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.535	U	0.347	U	0.433	U	0.511	U	0.527	U	0.747	U	0.227	U	0.479	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.583	U	0.378	U	0.471	U	0.556	U	0.574	U	0.813	U	0.247	U	0.521	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.598	U	0.388	U	0.484	U	0.571	U	0.589	U	0.835	U	0.254	UJ	0.535	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	3.01	U	1.95	U	2.43	U	2.87	U	2.96	U	4.2	U	1.28	U	2.69	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	3.15	U	2.04	U	2.55	U	3.01	U	3.1	U	4.4	U	1.34	U	2.82	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	1.83	U	1.18	U	1.48	U	1.74	U	1.8	U	2.55	U	0.776	U	1.63	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	1.42	U	0.918	U	1.15	U	1.35	U	1.4	U	1.98	U	0.602	U	1.27	UJ
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	1.09	U	0.704	U	0.879	U	1.04	U	1.07	U	1.52	U	0.462	U	0.972	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.85	UJ	0.551	UJ	0.688	U	0.812	U	0.837	U	1.19	U	0.361	U	0.761	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.331	U	0.214	U	0.268	U	0.316	U	0.326	U	0.462	U	0.14	U	0.296	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	1.97	U	1.28	U	1.59	U	1.88	U	1.94	U	2.75	U	0.836	U	1.76	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	1.87	U	1.21	U	1.52	U	1.79	U	1.84	U	2.62	U	0.796	U	1.68	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.551	U	0.357	U	0.446	U	0.526	U	0.543	U	0.769	U	0.234	U	0.493	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.772	U	0.5	U	0.624	U	0.737	U	0.76	U	1.08	U	0.328	U	0.69	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	10.8	U	6.98	U	8.71	U	10.3	U	10.6	U	15	U	4.58	U	9.63	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	5.83	U	3.78	U	4.71	U	5.56	U	5.74	U	8.13	U	2.47	U	5.21	U

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Date: 2/25/25
Checked by: MLB
Date2/25/2025:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0653	E1633DR	T	C6648-FS	E-A-BIOQ_PLT01_20240814	Perfluorobutanoic acid (PFBA)	2.19	J	2.19	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.611	J	0.611	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.659	J	0.659	J	TR	NG/G
			C6649-FS	E-A-BIOR_PLT02_20240814	Perfluorododecanoic acid (PFDoA)	0.221	U	0.221	UJ	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.359	U	0.359	UJ	EISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.15	J	0.15	J	TR	NG/G
			C6642-FS	E-A-BIOW_PLT01_20240814	Perfluorobutanoic acid (PFBA)	1.59	J	1.59	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	0.725	J	0.725	J	TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	69.1		69.1	J	MSD	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.7	J	1.7	J	TR	NG/G
			C6644-FS	E-A-BIOZ_PLT01_20240813	Perfluorobutanoic acid (PFBA)	2.56	J	2.56	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	1.18	J	1.18	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.36	J	1.36	J	TR	NG/G
			C6645-FS	E-T-BIOK_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.606	J	0.606	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.253	U	0.253	UJ	ISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.219	J	0.219	J	TR	NG/G
			C6650-FS	E-T-BIOL_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.607	J	0.607	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.236	U	0.236	UJ	ISL	NG/G
			C6646-FS	E-T-BION_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.658	J	0.658	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.256	U	0.256	UJ	ISL	NG/G
			C6647-FS	E-T-BIOO_PLT01_20240814	Perfluorobutanoic acid (PFBA)	0.562	J	0.562	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.329	U	0.329	UJ	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.534	U	0.534	UJ	EISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.219	U	0.219	UJ	EISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0668	E1633DR	T	C6866-FS	E-A-BIOO_INV01_20240813	Perfluoropentanoic acid (PFPeA)	1.32	J	1.32	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.37	J	1.37	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.536	J	0.536	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.958	J	0.958	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.904	J	0.904	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	7.27	U	0	R	EISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	3.77	J	3.77	J	TR	NG/G
			C6878-FS	E-A-BIOO_INV02_20240818	Perfluoroheptanoic acid (PFHpA)	0.898	J	0.898	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.2	J	1.2	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.702	J	0.702	J	TR	NG/G
			C6867-FS	E-A-BIOP_INV01_20240814	Perfluorononanoic acid (PFNA)	0.75	J	0.75	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.878	J	0.878	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.955	J	0.955	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	1.89	I	1.89	J	IAG	NG/G
			C6868-FS	E-A-BIOP_INV02_20240815	Perfluorooctanoic acid (PFOA)	2.83	I	2.83	J	IAG	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.26	J	1.26	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.724	J	0.724	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.06	J	1.06	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.839	J	0.839	J	TR	NG/G
			C6869-FS	E-A-BIOQ_INV01_20240814	Perfluorononanoic acid (PFNA)	0.684	J	0.684	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.863	J	0.863	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.479	J	0.479	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.863	J	0.863	J	TR	NG/G
			C6870-FS	E-A-BIOR_INV01_20240815	Perfluoroundecanoic acid (PFUnA)	0.99	J	0.99	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.434	J	0.434	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.85	J	0.85	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.578	J	0.578	J	TR	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0668	E1633DR	T	C6879-FS	E-A-BIOR_INV02_20240817	Perfluoroheptanoic acid (PFHpA)	1.14	J	1.14	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.668	J	0.668	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	2.33		2.33	J-	MSL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.613	U	0.613	UJ	MSL	NG/G
			C6880-FS	E-A-BIOS_INV01_20240817	Perfluorononanoic acid (PFNA)	1.32	J	1.32	J	TR	NG/G
			C6881-FS	E-A-BIOT_INV01_20240816	Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	1.07	J	1.07	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.13	J	1.13	J	TR	NG/G
			C6871-FS	E-A-BIOU_INV01_20240814	Perfluorononanoic acid (PFNA)	0.864	J	0.864	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	0.929	J	0.929	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.36	J	1.36	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.574	J	0.574	J	TR	NG/G
			C6872-FS	E-A-BIOV_INV01_20240814	Perfluorobutanoic acid (PFBA)	3.06	J	3.06	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	5.35		5.35	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	1.48	U	1.48	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	7.66	I	7.66	J	ISL, IAG	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.26	J	1.26	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	1.18	J	1.18	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.57	J	4.57	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.37	J	3.37	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.64	U	4.64	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.6	U	3.6	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	2.76	U	2.76	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	2.16	U	2.16	UJ	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.84	U	0.84	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5	U	5	UJ	ISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0668	E1633DR	T	C6872-FS	E-A-BIOV_INV01_20240814	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	4.76	U	4.76	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.4	U	1.4	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	1.96	U	1.96	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	179		179	J	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	14.1	J	14.1	J	ISL, TR	NG/G
			C6882-FS	E-A-BIOW_INV01_20240815	Perfluoropentanoic acid (PFPeA)	1.04	J	1.04	J	TR	NG/G
					Perfluorohexanoic acid (PFHxA)	1.06	J	1.06	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	0.78	J	0.78	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.16	J	1.16	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.641	J	0.641	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.575	J	0.575	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	22.4	J	22.4	J	TR	NG/G
			C6883-FS	E-A-BIOW_INV02_20240815	Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/G
					Perfluorohexanoic acid (PFHxA)	1.02	J	1.02	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.07	J	1.07	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	0.826	J	0.826	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.9	J	0.9	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.38	J	1.38	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.03	J	1.03	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.737	J	0.737	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	26.1	J	26.1	J	TR	NG/G
			C6873-FS	E-A-BIOX_INV01_20240813	Perfluorobutanoic acid (PFBA)	0.927	J	0.927	J	TR	NG/G
					Perfluorohexanoic acid (PFHxA)	1.31	J	1.31	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.983	J	0.983	J	TR	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0668	E1633DR	T	C6873-FS	E-A-BIOX_INV01_20240813	Perfluorodecanoic acid (PFDA)	0.653	J	0.653	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.21	J	1.21	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.623	J	0.623	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.768	J	0.768	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.772	J	0.772	J	TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	41.4		41.4	J-	MSL, MSD	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	23.1	J	23.1	J+	MSH, TR	NG/G
			C6874-FS	E-A-BIOX_INV02_20240813	Perfluoropentanoic acid (PFPeA)	1.42	J	1.42	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.22	J	1.22	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.51	J	1.51	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.47	J	1.47	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.832	J	0.832	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	28.5	J	28.5	J	TR	NG/G
			C6875-FS	E-A-BIOY_INV01_20240813	Perfluoropentanoic acid (PFPeA)	0.975	J	0.975	J	TR	NG/G
					Perfluorohexanoic acid (PFHxA)	1.14	J	1.14	J	TR	NG/G
					Perfluorodecanoic acid (PFDA)	0.834	J	0.834	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.903	J	0.903	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.306	J	0.306	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	15.4	J	15.4	J	TR	NG/G
			C6876-FS	E-A-BIOZ_INV01_20240813	Perfluorononanoic acid (PFNA)	0.747	J	0.747	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.13	J	1.13	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.735	J	0.735	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	3.19	I	3.19	J	IAG	NG/G
			C6877-FS	E-A-BIOZ_INV02_20240813	Perfluoropentanoic acid (PFPeA)	1.43	J	1.43	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.14	J	1.14	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.11	J	1.11	J	TR	NG/G

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					Perfluorododecanoic acid (PFDoA)	0.496	J	0.496	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.742	J	0.742	J	TR	NG/G
24-0669	E1633DR	T	C6884-FS	E-A-BIOM_FSH01_20240814	Perfluorooctanoic acid (PFOA)	0.7	J	0.7	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.19	J	1.19	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	1.58	J	1.58	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.14	J	1.14	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.63	J	1.63	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1.21	J	1.21	J	TR	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	32.6	J	32.6	J	TR	NG/G
			C6885-FS	E-A-BION_FSH01_20240815	Perfluorooctanoic acid (PFOA)	0.974	J	0.974	J	TR	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	1.15	J	1.15	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.948	J	0.948	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	26.3	J	26.3	J	TR	NG/G
			C6896-FS	E-A-BIOO_FSH01_20240818	Perfluorotetradecanoic acid (PFTeDA)	1.09	J	1.09	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.01	J	1.01	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	1.43	J	1.43	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	1.82	J	1.82	J	TR	NG/G
			C6886-FS	E-A-BIOP_FSH01_20240813	Perfluoroheptanesulfonic acid (PFHpS)	1.88	J	1.88	J	TR	NG/G
			C6887-FS	E-A-BIOQ_FSH01_20240815	Perfluorotetradecanoic acid (PFTeDA)	1.12	J	1.12	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.21	J	1.21	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	1.67	J	1.67	J-	EISH, TR	NG/G
			C6888-FS	E-A-BIOR_FSH01_20240814	Perfluorododecanesulfonic acid (PFDoS)	0.837	J	0.837	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	3.67	J	3.67	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	1.74	J	1.74	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	J	19	J	TR	NG/G
			C6897-FS	E-A-BIOS_FSH01_20240817	Perfluorodecanesulfonic acid (PFDS)	1.26	J	1.26	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	1.27	J	1.27	J	TR	NG/G

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			C6889-FS	E-A-BIOT_FSH01_20240813	Perfluorotridecanoic acid (PFTrDA)	5.68		5.68	J+	MSH	NG/G
					Perfluorooctanesulfonic acid (PFOS)	451	D	451	J	MSD	NG/G
24-0669	E1633DR	T	C6889-FS	E-A-BIOT_FSH01_20240813	Perfluorononanesulfonic acid (PFNS)	0.833	J	0.833	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	1.34	J	1.34	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.754	J	0.754	J-	MSL, TR	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.38	U	3.38	UJ	MSL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.75	U	3.75	UJ	MSL	NG/G
			C6890-FS	E-A-BIOU_FSH01_20240814	Perfluorododecanesulfonic acid (PFDoS)	1.02	J	1.02	J	TR	NG/G
			C6898-FS	E-A-BIOV_FSH01_20240815	Perfluorodecanoic acid (PFDA)	1.39	J	1.39	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	2.14	J	2.14	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	1.89	J	1.89	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	1.54	J	1.54	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.19	J	1.19	J	TR	NG/G
					Perfluorononanesulfonic acid (PFNS)	1.71	J	1.71	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.657	J	0.657	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	6.91	J	6.91	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	37	J	37	J	TR	NG/G
			C6891-FS	E-A-BIOW_FSH01_20240814	Perfluorododecanesulfonic acid (PFDoS)	1.15	J	1.15	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	20.8	J	20.8	J	TR	NG/G
			C6892-FS	E-A-BIOX_FSH01_20240813	Perfluorotridecanoic acid (PFTrDA)	8.19		8.19	J+	MSH, MSD	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.998	J	0.998	J-	MSL, TR	NG/G
					Perfluorooctanesulfonic acid (PFOS)	1310	D	1310	J	MSD	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	3.13		3.13	J-	MSL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	5.48	J	5.48	J	TR	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.67	U	3.67	UJ	MSL	NG/G

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					3-Perfluoroheptyl propanoic acid (7:3FTCA)	14.3	J	14.3	J	TR	NG/G

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24-0669	E1633DR	T	C6893-FS	E-A-BIOX_FSH02_20240813	Perfluorotetradecanoic acid (PFTeDA)	1.16	J	1.16	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	4.04	J	4.04	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	15.1	J	15.1	J	TR	NG/G
			C6894-FS	E-A-BIOY_FSH01_20240813	Perfluorononanoic acid (PFNA)	1.54	J	1.54	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	1.12	J	1.12	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.42	J	1.42	J	TR	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	1.47	J	1.47	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	2.83	J	2.83	J	TR	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	8.99	J	8.99	J	TR	NG/G
			C6895-FS	E-A-BIOZ_FSH01_20240813	Perfluorononanoic acid (PFNA)	1.55	J	1.55	J	TR	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	1.42	J	1.42	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	1.37	J	1.37	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.74	J	1.74	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	4.2	I	4.2	J	IAG	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	10.2	J	10.2	J	TR	NG/G
24-0679	E1633DR	T	C6772-FS	E-T-BIOC_PLT01_20240815	Perfluorobutanoic acid (PFBA)	1.9		1.9	J	ISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.303	U	0.303	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.207	U	0.207	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.196	U	0.196	UJ	ISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.122	J	0.122	U	CBG	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.65	U	0.65	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.504	U	0.504	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.387	U	0.387	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.303	U	0.303	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.118	U	0.118	UJ	ISL	NG/G

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24-0679	E1633DR	T	C6772-FS	E-T-BIOC_PLT01_20240815	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.7	U	0.7	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.667	U	0.667	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.196	U	0.196	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.275	U	0.275	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	3.83	U	3.83	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.07	U	2.07	UJ	ISL	NG/G
			C6773-FS	E-T-BIOC_PLT02_20240815	Perfluoropentanoic acid (PFPeA)	13.3		13.3	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.281	U	0.281	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.266	U	0.266	UJ	ISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.13	J	0.13	U	CBG	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	1.41	J	1.41	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.882	U	0.882	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.684	U	0.684	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.525	U	0.525	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.411	U	0.411	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.16	U	0.16	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.951	U	0.951	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.905	U	0.905	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.266	U	0.266	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.373	U	0.373	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.2	U	5.2	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.81	U	2.81	UJ	ISL	NG/G

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24-0679	E1633DR	T	C6774-FS	E-T-BIOD_PLT01_20240815	Perfluoropentanoic acid (PFPeA)	0.725	U	0.725	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.497	U	0.497	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.47	U	0.47	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.56	U	1.56	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	1.21	U	1.21	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.926	U	0.926	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.725	U	0.725	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.282	U	0.282	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.68	U	1.68	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.6	U	1.6	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.47	U	0.47	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.658	U	0.658	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	9.18	U	9.18	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	4.97	U	4.97	UJ	ISL	NG/G
			C6775-FS	E-T-BIOD_PLT02_20240815	Perfluoropentanoic acid (PFPeA)	0.374	U	0.374	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.256	U	0.256	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.242	U	0.242	UJ	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.173	U	0.173	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.803	U	0.803	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.623	U	0.623	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.478	U	0.478	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.374	U	0.374	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.145	U	0.145	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.865	U	0.865	UJ	ISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0679	E1633DR	T	C6775-FS	E-T-BIOD_PLT02_20240815	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.824	U	0.824	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.242	U	0.242	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.339	U	0.339	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	4.73	U	4.73	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.56	U	2.56	UJ	ISL	NG/G
			C6776-FS	E-T-BIOG_PLT01_20240817	Perfluoropentanoic acid (PFPeA)	227		227	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	34.1		34.1	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	8.84		8.84	J	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.406	J	0.406	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	1.24	I	1.24	J	IAG	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.818	I	0.818	J	IAG	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.304	J	0.304	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.538	I	0.538	J+	CBG, IAG	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.41	U	1.41	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	1.09	U	1.09	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.836	U	0.836	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.655	U	0.655	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.255	U	0.255	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.52	U	1.52	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.44	U	1.44	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.424	U	0.424	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.594	U	0.594	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	8.29	U	8.29	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	4.48	U	4.48	UJ	ISL	NG/G

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24-0679	E1633DR	T	C6777-FS	E-T-BIOG_PLT02_20240817	Perfluoropentanoic acid (PFPeA)	50.4		50.4	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	9.36		9.36	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.217	U	0.217	UJ	ISL	NG/G
					Perfluorooctanoic acid (PFOA)	5.23		5.23	J	ISL	NG/G
					Perfluorononanoic acid (PFNA)	6.89	I	6.89	J	IAG	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.159	J	0.159	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.132	J	0.132	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.72	U	0.72	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.559	U	0.559	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.429	U	0.429	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.335	U	0.335	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.13	U	0.13	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.776	U	0.776	UJ	ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.739	U	0.739	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.217	U	0.217	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.304	U	0.304	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	4.25	U	4.25	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.3	U	2.3	UJ	ISL	NG/G
			C6778-FS	E-T-BIOH_PLT01_20240817	Perfluoropentanoic acid (PFPeA)	6.78		6.78	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	13.9		13.9	J	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.22	U	0.22	UJ	ISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.164	J	0.164	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.214	U	0.214	UJ	EISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.224	J	0.224	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.73	U	0.73	UJ	EISL, ISL	NG/G

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24-0679	E1633DR	T	C6778-FS	E-T-BIOH_PLT01_20240817	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.566	U	0.566	UJ	EISL, ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.434	U	0.434	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.34	U	0.34	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.132	U	0.132	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.786	U	0.786	UJ	EISL, ISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.748	U	0.748	UJ	EISL, ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.22	U	0.22	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.308	U	0.308	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	4.3	U	4.3	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.33	U	2.33	UJ	ISL	NG/G
			C6779-FS	E-T-BIOH_PLT02_20240817	Perfluoropentanoic acid (PFPeA)	2.84		2.84	J	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.287	U	0.287	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.271	U	0.271	UJ	ISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.264	U	0.264	UJ	MSL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.155	U	0.155	UJ	MSL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	3.91		3.91	J-	MSL, MSD	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.899	U	0	R	EISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.698	U	0	R	EISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.535	U	0.535	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.419	U	0.419	UJ	LCL, MSL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.163	U	0.163	UJ	MSL, ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.969	U	0	R	EISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.922	U	0	R	EISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.271	U	0.271	UJ	MSL, ISL	NG/G

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24-0679	E1633DR	T	C6779-FS	E-T-BIOH_PLT02_20240817	3-Perfluoropropyl propanoic acid (3:3FTCA)	0.38	U	0.38	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.3	U	5.3	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.87	U	2.87	UJ	ISL	NG/G
			C6780-FS	E-T-BIOM_PLT01_20240815	Perfluoropentanoic acid (PFPeA)	0.635	U	0.635	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.435	U	0.435	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.412	U	0.412	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.36	U	1.36	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	1.06	U	1.06	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.812	U	0.812	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.635	U	0.635	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.247	U	0.247	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.47	U	1.47	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.4	U	1.4	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.412	U	0.412	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.576	U	0.576	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	8.05	U	8.05	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	4.35	U	4.35	UJ	ISL	NG/G
24-0680	E1633DR	T	C6782-FS	E-A-BIOB_PLT01_20240815	Perfluoro-4-methoxybutanoic acid (PFMBA)	0.581	U	0.581	UJ	LCL	NG/G
			C6783-FS	E-A-BIOC_PLT01_20240816	Perfluorobutanoic acid (PFBA)	0.882	U	0.882	UJ	ISL	NG/G
					Perfluorononanoic acid (PFNA)	0.482	J	0.482	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.85	U	0.85	UJ	LCL	NG/G
			C6784-FS	E-A-BIOD_PLT01_20240817	Perfluorohexanesulfonic acid (PFHxS)	0.673	I	0.673	J	IAG	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.8	U	0.8	UJ	LCL	NG/G

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24-0680	E1633DR	T	C6785-FS	E-A-BIOE_PLT01_20240818	Perfluorooctanoic acid (PFOA)	0.584	J	0.584	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.621	J	0.621	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.642	J	0.642	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.147	J	0.147	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.2	J	1.2	J-	LCL, TR	NG/G
			C6786-FS	E-A-BIOF_PLT01_20240816	Perfluorooctanoic acid (PFOA)	0.135	J	0.135	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.18	U	0.18	UJ	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.293	U	0.293	UJ	EISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	1.44	U	0	R	EISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.406	U	0.406	UJ	LCL	NG/G
			C6787-FS	E-A-BIOG_PLT01_20240817	Perfluorodecanoic acid (PFDA)	0.475	J	0.475	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.591	U	0	R	EISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	3.32	U	0	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	3.48	U	0	R	EISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.939	U	0.939	UJ	LCL	NG/G
			C6788-FS	E-A-BIOH_PLT01_20240817	Perfluorobutanoic acid (PFBA)	0.634	J	0.634	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.401	U	0.401	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.275	U	0.275	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.26	U	0.26	UJ	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.862	U	0.862	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.669	U	0.669	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.513	U	0.513	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.401	U	0.401	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.156	U	0.156	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.929	U	0.929	UJ	ISL	NG/G

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24-0680	E1633DR	T	C6788-FS	E-A-BIOH_PLT01_20240817	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.885	U	0.885	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.26	U	0.26	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.364	U	0.364	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.09	U	5.09	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	2.75	U	2.75	UJ	ISL	NG/G
			C6789-FS	E-A-BIOI_PLT01_20240817	Perfluorooctanesulfonic acid (PFOS)	0.314	J	0.314	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.711	U	0.711	UJ	LCL	NG/G
			C6790-FS	E-A-BIOJ_PLT01_20240816	Perfluorononanoic acid (PFNA)	0.727	J	0.727	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.723	U	0.723	UJ	EISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	3.61		3.61	J-	EISH	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.15	U	1.15	UJ	LCL	NG/G
			C6781-FS	E-T-BIOQ_PLT01_20240816	Perfluorobutanoic acid (PFBA)	1.06	J	1.06	J	ISL, TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.47	U	0	R	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.322	U	0	R	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.304	U	0	R	ISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.01	U	0	R	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.783	U	0	R	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.6	U	0	R	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.47	U	0	R	ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.183	U	0	R	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.09	U	0	R	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.03	U	0	R	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.304	U	0	R	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.426	U	0	R	ISL	NG/G

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					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	5.95	U	0	R	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.22	U	0	R	ISL	NG/G

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24-0681	E1633DR	T	C6791-FS	E-A-BIOK_PLT01_20240816	Perfluoroheptanoic acid (PFHpA)	0.568	J	0.568	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.576	J	0.576	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.599	J	0.599	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	4.12		4.12	J+	LCH	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	4.23		4.23	J+	LCH	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	2.39	J	2.39	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	2.51		2.51	J-	LCL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.92	U	1.92	UJ	CVHL	NG/G
			C6792-FS	E-A-BIOK_PLT02_20240816	Perfluoroundecanoic acid (PFUnA)	0.598	J	0.598	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.537	J	0.537	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	5.34		5.34	J+	LCH	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	3.1	I	3.1	J+	LCH, IAG	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	3.37		3.37	J-	LCL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.98	U	1.98	UJ	CVHL	NG/G
			C6793-FS	E-A-BIOL_PLT01_20240815	Perfluorobutanoic acid (PFBA)	1.71	J	1.71	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.675	J	0.675	J	TR	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.817	J	0.817	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.621	J	0.621	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	1.44	U	1.44	UJ	LCL	NG/G
			C6794-FS	E-A-BIOM_PLT01_20240816	Perfluorodecanoic acid (PFDA)	0.223	J	0.223	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.357	J	0.357	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.379	J	0.379	J+	LCH, TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	4.14		4.14	J+	LCH	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.514	U	0.514	UJ	LCL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.19	U	1.19	UJ	CVHL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.48	J	3.48	J	TR	NG/G

Prepared by:AKN
Date:2/25/25
Checked by: MLB
Date:2/25/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Ecological Tissue Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0681	E1633DR	T	C6795-FS	E-A-BION_PLT01_20240815	Perfluorobutanoic acid (PFBA)	1.48	J	1.48	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.615	J	0.615	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.335	J	0.335	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.23	J	0.23	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.607	J	0.607	J-	LCL, TR	NG/G
			C6796-FS	E-A-BIOS_PLT01_20240817	Perfluorobutanoic acid (PFBA)	1.15	J	1.15	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.563	U	0.563	UJ	ISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.385	U	0.385	UJ	ISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.365	U	0.365	UJ	ISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.334	J	0.334	J	TR	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.21	U	1.21	UJ	ISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.938	U	0.938	UJ	ISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.719	U	0.719	UJ	ISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.563	U	0.563	UJ	LCL, ISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.219	U	0.219	UJ	ISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.3	U	1.3	UJ	ISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.24	U	1.24	UJ	ISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.365	U	0.365	UJ	ISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.51	U	0.51	UJ	ISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	7.13	U	7.13	UJ	ISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	3.85	U	3.85	UJ	ISL	NG/G
			C6797-FS	E-A-BIOV_PLT01_20240815	Perfluorobutanoic acid (PFBA)	1.21	J	1.21	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	1.56	J	1.56	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.85	U	0.85	UJ	LCL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0681	E1633DR	T	C6798-FS	E-A-BIOX_PLT01_20240813	Perfluorobutanoic acid (PFBA)	1.26	J	1.26	J	TR	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.347	U	0.347	UJ	MSL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.306	J	0.306	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0842	J	0.0842	J	TR	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.551	U	0.551	UJ	LCL	NG/G
24-0697	E1633DR	T	C6971-FS	E-A-BIOA_PLT01_20240820	Perfluorobutanoic acid (PFBA)	0.599	J	0.599	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.359	J	0.359	J	TR	NG/G
			C6972-FS	E-A-BIOCS_PLT01_20240819	Perfluorobutanoic acid (PFBA)	0.674	J	0.674	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.361	U	0.361	UJ	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.586	U	0.586	UJ	EISL	NG/G
			C6976-FS	E-A-BIOO_PLT02_20240819	Perfluorooctanoic acid (PFOA)	0.248	J	0.248	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.302	J	0.302	J	TR	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.533	J	0.533	J	TR	NG/G
			C6974-FS	E-T-BIOB_PLT01_20240819	Perfluorobutanoic acid (PFBA)	0.613	J	0.613	J	TR	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.234	U	0.234	UJ	EISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.227	U	0.227	UJ	ISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.134	U	0.134	UJ	ISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.201	U	0.201	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.883	U	0.883	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.542	U	0.542	UJ	ISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.535	U	0.535	UJ	ISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.254	U	0.254	UJ	EISL	NG/G
			C6975-FS	E-T-BIOE_PLT01_20240819	Perfluorobutanoic acid (PFBA)	1.85	J	1.85	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.758	J	0.758	J	TR	NG/G
					Perfluorononanoic acid (PFNA)	0.507	U	0.507	UJ	ISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.18	J	0.18	J	TR	NG/G

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Checked by: MLB
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Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
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Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	1.27	U	1.27	UJ	MSL	NG/G

Prepared by:AKN
Date:2/25/25
Checked by: MLB
Date:2/25/2025

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

FEBRUARY 25, 2025

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
%	percent
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomer sulfonic acid
HFPO-DA	hexafluoropropylene oxide dimer acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoDA	perfluorododecanoic acid
PFDoDS	perfluorododecanesulfonic acid
PFDS	perfluorodecanesulfonic acid
PFHpA	perfluoroheptanoic acid
PFHpS	perfluoroheptanesulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFNS	perfluorononanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFPeA	perfluoropentanoic acid

PFPeS	perfluoropentanesulfonic acid
PFTeDA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America, Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 8 aqueous samples on 24 and 25 October 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to SGS North America, Inc. (SGS), located in Orlando, Florida, where they were received on 9 and 10 May 2024 and assigned to job number FC20069. SGS analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Method 1633.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) State 2B validation on the field samples associated with this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms but does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Revision 1, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the instrument sensitivity check (ISC);
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);

- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
NJ	The analyte has been tentatively identified as present and the concentration is estimated.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISH	High EIS recovery.
LCL	Low LCS recovery.
LDD	Imprecision between primary and laboratory duplicate results.
MSL	Low MS recovery.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius (°C).

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 9.0.

7.1 PFAS BY EPA METHOD 1633

PFAS results generated by SGS may be considered usable with the limitations described in Sections 7.1.1 through 7.1.15.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 ION TRANSITIONS

Parent, quantification, and confirmation ion masses used for the analysis of the samples reviewed in this report matched the ions specified in EPA Method 1633 Table 10.

7.1.4 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20 percent (%) and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.5 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.6 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.7 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.8 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.9 LABORATORY AND CALIBRATION BLANK DETECTIONS

Target analytes were not detected in the laboratory or calibration blanks associated with the samples reviewed in this report, with the following exception:

- Perfluorotetradecanoic acid (PFTeDA) was detected at a concentration of 0.00051 micrograms per liter in the calibration blank associated with the analysis of samples LORNG_LYS01007D_10252024, LORNG_LYS01007S_10242024, LORNG_LYS05012D_10242024, LORNG_LYS05012S_10242024, LORNG_LYS07007D_10252024, LORNG_LYS07007DDUP_10252024, and LORNG_LYS07007SDUP_10252024. PFTeDA was not detected in the associated samples and data usability is not adversely affected by the blank detection.

7.1.10 LABORATORY CONTROL SAMPLE ACCURACY

Low level LCS (LLCS) and LCS were included with each extraction batch, (LLCS) spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the method-specified limits, with the following exceptions:

- Perfluorohexanoic acid (PFHxA [69%]), perfluoroheptanoic acid (PFHpA [69%]), perfluorononanoic acid (PFNA [69%]), and N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE [65%]) recoveries were low in the LLCS associated with the analysis of all samples reviewed in this report. Data limitations are summarized below.
    - WSP J- qualified the detected and UJ qualified the non-detect PFHxA, PFHpA, PFNA, and NMeFOSE results from sample LORNG_LYS07007S_10252024 due to potential low analytical bias. (J-/UJ, LCL)
    - PFHxA, PFHpA, PFNA, and NMeFOSE were not reported from the associated analysis in the remaining associated samples and data usability is not adversely affected by potential low analytical bias.

7.1.11 MATRIX SPIKE ACCURACY

SGS performed MS analyses on sample LORNG_LYS07007S_10252024. MS recoveries were within the method-specified limits, with the following exceptions:

- Perfluorohexanesulfonic acid (PFHxS [219%]), perfluoroheptanesulfonic acid (PFHpS [55%]), PFOS (-948%), perfluorononanesulfonic acid (PFNS [62%]), perfluorodecanesulfonic acid (PFDS [59%]), and 6:2 fluorotelomer sulfonic acid (FTS [62%]) were outside limits in the MS performed on sample LORNG_LYS07007S_10252024. Data limitations are summarized below.
    - WSP J- qualified the detected and UJ qualified the non-detect PFHpS, PFNS, PFDS, and 6:2 FTS results from the associated sample due to potential low analytical bias. (J-/UJ, MSL)

  - PFHxS and PFOS were detected in the unspiked native sample at concentrations greater than four times the spike concentrations and data usability cannot be assessed based on MS recoveries.

- PFHpA (54%), perfluorododecanoic acid (PFDoDA [69%]), PFHxS (-123%), PFOS (0%), and perfluorooctanesulfonamide (PFOSA [68%]) were low in the MS performed on sample LORNG_LYS07007S_10252024. Data limitations are summarized below.
  - PFHpA, PFDoDA, and PFOSA were not reported from the associated instrument in the unspiked native sample, and no data were qualified based on MS recoveries.
  - PFHxS and PFOS were detected in the unspiked native sample at concentrations greater than four times the spike concentrations and data usability cannot be assessed based on MS recoveries.

7.1.12 DUPLICATE PRECISION

SGS performed a duplicate analysis on sample LORNG_LYS07007SDUP_10252024. Precision between duplicate analyses was acceptable, with RPDs less than 30% or differences between analyte concentrations less than the LOQ, with the following exceptions:

- RPDs between PFHpS and 6:2 FTS results were high at 59% and 31%, respectively, in the duplicate analysis of sample LORNG_LYS07007SDUP_10252024. WSP J qualified the detected PFHpS and 6:2 FTS results from sample LORNG_LYS07007SDUP_10252024 because of potential analytical imprecision. (J, LDD)

7.1.13 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the method-specified limits, with the following exceptions:

- Recovery of the EISs $^{13}C_4$-PFHpA and $^{13}C_8$-PFOSA were high at 131% and 135%, respectively, in the standard analysis of sample LORNG_LYS01007S_10242024. Data limitations are summarized below.
  - WSP J- qualified the detected PFOSA result from the associated sample due to high EIS recovery. (J-, EISH)
  - PFHpA was not reported from the associated analysis and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_8$-PFOS was high at 132% in the 1:10 dilution analysis of sample LORNG_LYS07007S_10252024. Data limitations are summarized below.
  - WSP J- qualified the detected PFOS result from the associated sample due to high EIS recovery. (J-, EISH)
  - PFHpS, PFNS, PFDS, and perfluorododecanesulfonic acid (PFDoDS) were not reported from the associated analysis and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_8$-PFOS and $^{13}C_8$-PFOSA were high at 132% and 145%, respectively, in the reanalysis of sample LORNG_LYS01007D_10252024. PFOS, PFHpS, PFNS, PFDS, PFDoDS, and PFOSA were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_4$-PFHpA (134%), $^{13}C_6$-perfluorodecanoic acid (PFDA [132%]), and $^{13}C_3$-hexafluoropropylene oxide dimer acid (HFPO-DA [135%]) were high in the 1:10 dilution analysis of sample LORNG_LYS01007D_10252024. PFDA, PFHpA, HFPO-DA, 4,8-dioxa-3H-perfluorononanoic acid, 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid, and 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_3$-perfluorobutanesulfonic acid (PFBS [153%]), $^{13}C_3$-PFHxS (140%), and $^{13}C_8$-PFOSA (132%) were high in the 1:10 dilution reanalysis of sample LORNG_LYS01007S_10242024. PFBS, PFHxS, perfluoropentanesulfonic acid (PFPeS), and PFOSA were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.

- Recoveries of the EISs $^{13}C_3$-PFBS (184%), $^{13}C_3$-PFHxS (168%), and $^{13}C_2$-4:2 FTS (207%) were high in the 1:10 dilution reanalysis of sample LORNG_LYS05012D_10242024. PFBS, PFHxS, PFPeS, and 4:2 FTS were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EiSs $^{13}C_3$-PFHxS and $^{13}C_8$-PFOSA were high at 142% and 138%, respectively, in the reanalysis of sample LORNG_LYS05012S_10242024. PFHxS, PFPeS, and PFOSA were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recovery of the EIS $^{13}C_9$-PFNA was high at 131% in the initial 1:10 dilution analysis of sample LORNG_LYS05012S_10242024. PFNA was not reported from the associated analysis and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_3$-PFBS and $^{13}C_3$-PFHxS were high at 140% and 134%, respectively, in the 1:10 dilution reanalysis of sample LORNG_LYS05012S_10242024. PFBS, PFHxS, and PFPeS were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_7$-perfluoroundecanoic acid (PFUnA [156%]), $^{13}C_2$-PFDoDA (143%), $^{13}C_2$-PFTeDA (141%), $^{13}C_8$-PFOS (134%), $^{13}C_8$-PFOSA (166%), d_3-N-methyl perfluorooctanesulfonamide (NMeFOSA [137%]), d_5-N-ethyl perfluorooctanesulfonamide (NEtFOSA [139%]), d_7-NMeFOSE (154%), and d_9-N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE [160%]) were high in the reanalysis of sample LORNG_LYS07007DDUP_10252024. Data limitations are summarized below.
  - NMeFOSE was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
  - PFUnA, PFTeDA, perfluorotridecanoic acid (PFTrDA), PFDoDA, PFOS, PFHpS, PFNS, PFDS, PFDoDS, PFOSA, NEtFOSE, NEtFOSA, and NMeFOSA were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_8$-PFOS (134%), $^{13}C_8$-PFOSA (149%), d_5- N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA [144%]), d_7-MeFOSE (138%), and d_9-EtFOSE (135%) were high in the initial standard analysis of sample LORNG_LYS07007SDUP_10252024. PFOS, PFHpS, PFNS, PFDS, PFDoDS, PFOSA, NEtFOSAA, NMeFOSE, and NEtFOSE were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_7$-PFUnA (166%), $^{13}C_2$-PFDoDA (142%), $^{13}C_2$-PFTeDA (140%), $^{13}C_8$-PFOSA (178%), d_7-NMeFOSE (164%), and d_9-NEtFOSE (171%) were high in the standard reanalysis of sample LORNG_LYS07007SDUP_10252024. PFUnA, PFTeDA, PFTrDA, PFDoDA, PFOSA, NMeFOSE, and NEtFOSE were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recovery of the EIS $^{13}C_8$-perfluorooctanoic acid (PFOA) was high at 136% in the initial 1:10 dilution analysis of sample LORNG_LYS07007SDUP_10252024. PFOA was not reported from the associated analysis and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_3$-PFBS (136%), $^{13}C_3$-PFHxS (163%), $^{13}C_8$-PFOS (141%), and d_5-NEtFOSAA (143%) were high in the 1:10 dilution reanalysis of sample LORNG_LYS07007SDUP_10252024. PFBS, PFHxS, PFPeS, PFOS, PFHpS, PFNS, PFDS, PFDoDS, and NEtFOSAA were not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.

7.1.14 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

There were no field duplicates collected with the samples reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 320 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- J-: WSP J- qualified 7 records (2.2%) due to high EIS recoveries or low LCS or MS recoveries.
- J/UJ: WSP J qualified 18 records (5.6%) due to low LCS or MS recoveries, imprecision between primary and laboratory duplicate results, and/or detected concentrations less than the LOQ.

Final results are summarized in Table 2 and data qualified during validation are summarized in Table 3.

10 REFERENCES

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EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater, Stormwater, and Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

							Method Class	PFAS
							Analysis Method	E1633DR
							Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount	**Notes**
FC20069	LYS01007D	LORNG_LYS01007D_10252024	FC20069-1	10/25/2024	WI	N	40	
	LYS01007S	LORNG_LYS01007S_10242024	FC20069-2	10/24/2024	WI	N	40	
	LYS05012D	LORNG_LYS05012D_10242024	FC20069-3	10/24/2024	WI	N	40	
	LYS05012S	LORNG_LYS05012S_10242024	FC20069-4	10/24/2024	WI	N	40	
	LYS07007D	LORNG_LYS07007D_10252024	FC20069-5	10/25/2024	WI	N	40	
	LYS07007DDUP	LORNG_LYS07007DDUP_10252024	FC20069-6	10/25/2024	WI	N	40	
	LYS07007S	LORNG_LYS07007S_10252024	FC20069-7	10/25/2024	WI	N	40	
	LYS07007SDUP	LORNG_LYS07007SDUP_10252024	FC20069-8	10/25/2024	WI	N	40	

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

WI = Porewater Sample

ParamCount = Number of target analtytes reported

Prepared by:AKN
Date:1/21/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC20069															
			Location	LYS01007D		LYS01007S		LYS05012D		LYS05012S		LYS07007D		LYS07007DDUP		LYS07007S		LYS07007SDUP	
			Sample Date	10/25/2024		10/24/2024		10/24/2024		10/24/2024		10/25/2024		10/25/2024		10/25/2024		10/25/2024	
			Sample ID	LORNG_LYS01007D_10252024		LORNG_LYS01007S_10242024		LORNG_LYS05012D_10242024		LORNG_LYS05012S_10242024		LORNG_LYS07007D_10252024		LORNG_LYS07007DDUP_10252024		LORNG_LYS07007S_10252024		LORNG_LYS07007SDUP_10252024	
			QC Code	N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	185		159		558		139		1100		1070		1300		912	
		Perfluoropentanoic acid (PFPeA)	NG/L	582		394		1770		424		5630		4970		5530		3810	
		Perfluorohexanoic acid (PFHxA)	NG/L	1280		934		2670		495		6000		3840		3890	J-	2880	
		Perfluoroheptanoic acid (PFHpA)	NG/L	524		404		832		1060		3000		2050		1930	J-	1850	
		Perfluorooctanoic acid (PFOA)	NG/L	1610		887		738		630		9020		5770		1760		1380	
		Perfluorononanoic acid (PFNA)	NG/L	218		104		19.7	J	18.9	J	255		456		657	J-	377	
		Perfluorodecanoic acid (PFDA)	NG/L	9.1	J	10.6	J	17	U	4.8	J	50	U	33	U	57.2	J	14.1	J
		Perfluoroundecanoic acid (PFUnA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		Perfluorododecanoic acid (PFDoA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	157		143		885		79.1		3250		1600		1320		877	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	317		277		1050		101		6690		3590		2210		1720	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	12800		10800		7340		1100		117000		48400		17400		11900	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	281		205		133		37.1		1550		3250		761	J-	1110	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	10200		10900		332		7830		17200		40000		115000	J-	72800	
		Perfluorononanesulfonic acid (PFNS)	NG/L	17	U	24.7	J	17	U	60.8		50	U	33	U	100	UJ	33	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	UJ	33	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	67	U	67	U	29.7	J	67	U	209	J	180	J	400	U	82.9	J
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	67	U	67	U	932		67	U	30500		22200		3580	J-	4870	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	67	U	67	U	67	U	134	J	200	U	130	U	400	U	130	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	33.8		30.2	J-	17	U	272		50	U	33	U	100	U	330	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	170	U	170	U	170	U	170	U	500	U	330	U	1000	UJ	3300	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	170	U	170	U	170	U	170	U	500	U	330	U	1000	U	3300	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	33	U	33	U	33	U	33	U	100	U	67	U	200	U	67	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	17	U	17	U	17	U	17	U	50	U	33	U	100	U	33	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	83	U	83	U	83	U	83	U	250	U	170	U	500	U	170	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	170	U	170	U	170	U	170	U	500	U	330	U	1000	U	330	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	170	U	170	U	170	U	170	U	500	U	330	U	1000	U	330	U

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Date: 2/25/25
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Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC20069	E1633DR	T	FC20069-1	LORNG_LYS01007D_10252024	Perfluorodecanoic acid (PFDA)	9.1	J	9.1	J	TR	NG/L
			FC20069-2	LORNG_LYS01007S_10242024	Perfluorodecanoic acid (PFDA)	10.6	J	10.6	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	24.7	J	24.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	30.2	J	30.2	J-	EISH, TR	NG/L
			FC20069-3	LORNG_LYS05012D_10242024	Perfluorononanoic acid (PFNA)	19.7	J	19.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	29.7	J	29.7	J	TR	NG/L
			FC20069-4	LORNG_LYS05012S_10242024	Perfluorononanoic acid (PFNA)	18.9	J	18.9	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	4.8	J	4.8	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	134	J	134	J	TR	NG/L
			FC20069-5	LORNG_LYS07007D_10252024	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	209	J	209	J	TR	NG/L
			FC20069-6	LORNG_LYS07007DDUP_10252024	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	180	J	180	J	TR	NG/L
			FC20069-7	LORNG_LYS07007S_10252024	Perfluorohexanoic acid (PFHxA)	3890	=	3890	J-	LCL	NG/L
					Perfluoroheptanoic acid (PFHpA)	1930	=	1930	J-	LCL	NG/L
					Perfluorononanoic acid (PFNA)	657	=	657	J-	LCL	NG/L
					Perfluorodecanoic acid (PFDA)	57.2	J	57.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	761	=	761	J-	MSL	NG/L
					Perfluorooctanesulfonic acid (PFOS)	115000	=	115000	J-	EISH	NG/L
					Perfluorononanesulfonic acid (PFNS)	100	U	100	UJ	MSL	NG/L
					Perfluorodecanesulfonic acid (PFDS)	100	U	100	UJ	MSL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3580	=	3580	J-	MSL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	1000	U	1000	UJ	LCL	NG/L

Prepared by:AKN
Date:2/25/25
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Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Groundwater Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC20069	E1633DR	T	FC20069-8	LORNG_LYS07007SDUP_10252024	Perfluorodecanoic acid (PFDA)	14.1	J	14.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1110	=	1110	J	LDD	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	82.9	J	82.9	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4870	=	4870	J	LDD	NG/L

Prepared by:AKN
Date:2/25/25
Checked by:MLB
Date:2/25/2025

DATA VALIDATION REPORT

LORING PFAS RI
2024 HUMAN HEALTH FORAGING SAMPLING PROGRAM
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
SPRING AND SUMMER 2024 - SDGS 24-0507, 24-0610, 24-0666
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JANUARY 21, 2025

DATA VALIDATION REPORT

2024 HUMAN HEALTH FORAGING SAMPLING PROGRAM
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

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January 21, 2025

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
3:3 FTCA	3-perfluoropropyl propanoic acid
5:3 FTCA	3-perfluoropentyl propanoic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
Batelle	Batelle Norwell Operations
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomer sulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NFDHA	nonafluoro-3,6-dioxaheptanoic acid
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoDA	perfluorododecanoic acid
PFDoDS	perfluorododecanesulfonic acid
PFEESA	perfluoro(2-ethoxyethane)sulfonic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFMBA	perfluoro-4-methoxybutanoic acid
PFMPA	perfluoro-3-methoxypropanoic acid
PFPeA	perfluoropentanoic acid
PFPeS	perfluoropentanesulfonic acid

PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFNA	perfluorononanoic acid
PFTeDA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 15 tissue samples between 21 May and 18 August 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to Batelle Norwell Operations (Batelle), located in Norwell, Massachusetts, where they were received on 30 May and 21 August 2024. Batelle assigned the samples to sample delivery groups 24-0507, 24-0610, and 24-0666 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) Stage 2B validation on 100 percent (%) of Batelle's data for the samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms. Stage 2B validation does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ICS;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by PFAS recovery in laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MS/MS duplicates (MSDs);

- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J The reported result was an estimated value.

J+ The reported result was an estimated value with a positive bias.

J- The reported result was an estimated value with a negative bias.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

U The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.

UJ The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISL Low EIS recovery.

MSL Low MS recovery. Result may be biased low.

NISL Low NIS recovery.

TR The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report are considered usable with the limitations and exceptions described in Sections 7.1 through 8.0. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Batelle may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 ION TRANSITIONS

Parent, quantification, and confirmation ion masses used for the analysis of the samples reviewed in this report matched the ions specified in EPA Method 1633 Table 10.

7.1.4 INITIAL CALIBRATION COMPLIANCE

Initial calibrations relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.5 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.6 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.7 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.8 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.9 LABORATORY AND CALIBRATION BLANK DETECTIONS

Target analytes were not detected in the laboratory and calibration blanks associated with the sample reviewed in this report.

7.1.10 LABORATORY CONTROL SAMPLE ACCURACY

Low-level LCS (LLCS) and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the quality assurance project plan (QAPP)-specified 40 to 150% limits, with the following exceptions:

- Perfluoro-4-methoxybutanoic acid (PFMBA [152%]), 3-perfluoropropyl propanoic acid (3:3 FTCA [152%]), and 3-perfluoroheptyl propanoic acid (7:3 FTCA [157%]) recoveries were high in the LCS associated with the analysis of samples F-BIOA02_CTS01_20240521 and F-BIOC03_CTS01_20240521. PFMBA, 3:3 FTCA, and 7:3 FTCA were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- Perfluoro-3-methoxypropanoic acid (PFMPA) and 3:3 FTCA recoveries were high at 176% and 165%, respectively, in the LCS associated with the analysis of samples F-BIOA02_LBT01_20240521, F-BIOA07_LBT01_20240522, F-BIOB01_CTS01_20240522, F-BIOB08_LBT01_20240522, F-BIOC06_CTS01_20240521, F-BIOC09_CTS01_20240523, and F-BIOCS01_CTS01_20240523. PFMPA and 3:3 FTCA were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- PFMPA recovery was high at 153% in the LLCS associated with the analysis of samples F-BIOA02_LBT01_20240521, F-BIOA07_LBT01_20240522, F-BIOB01_CTS01_20240522, F-BIOB08_LBT01_20240522, F-BIOC06_CTS01_20240521, F-BIOC09_CTS01_20240523, and F-BIOCS01_CTS01_20240523. PFMPA was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- 7:3 FTCA recovery was high at 173% in the LCS associated with the analysis of samples F-BIOA10_BLB01_20240818, F-BIOA10_LBT01_20240818, F-BIOB10_BLB01_20240817, F-BIOC10_BLB01_20240817, F-BIOC10_LBT01_20240818, and F-BIOC11_BLB02_20240818. 7:3 FTCA was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- Perfluorohexanoic acid (PFHxA [201%]), perfluorotridecanoic acid (PFTrDA [159%]), and 7:3 FTCA (196%) recoveries were high in the LCS associated with the analysis of samples F-BIOA10_BLB01_20240818, F-BIOA10_LBT01_20240818, F-BIOB10_BLB01_20240817, F-BIOC10_BLB01_20240817, F-BIOC10_LBT01_20240818, and F-BIOC11_BLB02_20240818. PFHxA, PFTrDA, and 7:3 FTCA were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

7.1.11 MATRIX SPIKE ACCURACY AND PRECISION

Batelle performed MS and/or MSD analyses on sample F-BIOC09_CTS01_20240523. Recoveries were within the QAPP-specified 40 to 150% limits and RPDs between MS and MSD results were less than the QAPP-specified maximum of 30%, with the following exceptions:

- 7:3 FTCA recovery was high at 164% in the MS and perfluorododecanesulfonic acid (PFDoDS) recovery was low at 38% in the MSD performed on sample F-BIOC09_CTS01_20240523. Additionally, RPDs between perfluorotetradecanoic acid (PFTeDA) and PFTrDA results were high at 34% and 46%, respectively. Data limitations are summarized below.
    - WSP UJ qualified the non-detect PFDoDS result from the associated sample due to potential low analytical bias. (UJ, MSL)
    - 7:3 FTCA was not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias.
    - PFTeDA and PFTrDA were not detected in the unspiked native sample and data usability is not adversely affected by potential analytical imprecision.

7.1.12 LABORATORY DUPLICATE PRECISION

Batelle did not perform duplicate analyses on the samples reviewed in this report.

7.1.13 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the QAPP-specified 20 to 150% limits, with the following exceptions:

- Recoveries of the EISs d_5-N-ethyl perfluorooctanesulfonamide (d_5-NEtFOSA) and d_3-N-methyl perfluorooctanesulfonamide (d_3-NMeFOSA) were low at 9% and 11%, respectively, in the analysis of sample F-BIOA02_CTS01_20240521. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect NEtFOSA result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect NMeFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recovery of the EIS d_5-NEtFOSA was low at 14% in the analysis of sample F-BIOC03_CTS01_20240521. WSP UJ qualified the non-detect NEtFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-4:2 fluorotelomer sulfonic acid (FTS [293%]), $^{13}C_2$-6:2 FTS (286%), $^{13}C_2$-perfluorododecanoic acid (PFDoDA [19%]), $^{13}C_3$-perfluorobutanesulfonic acid (PFBS [152%]), d_3-NMeFOSA (18%), d_5-NEtFOSA (15%), and d_9-N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE [18%]) were outside limits in the analysis of sample F-BIOA02_LBT01_20240521. Data limitations are summarized below.
  - WSP UJ qualified the non-detect PFDoDA, NMeFOSA, NEtFOSA, and NEtFOSE results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 4:2 FTS, 6:2 FTS, and PFBS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-4:2 FTS (369%), $^{13}C_2$-6:2 FTS (271%), $^{13}C_2$-8:2 FTS (263%), $^{13}C_3$-PFBS (189%), and d_5-NEtFOSA (14%) were outside limits in the analysis of sample F-BIOA07_LBT01_20240522. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
  - 4:2 FTS, 6:2 FTS, 8:2 FTS, and PFBS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recovery of the EIS $^{13}C_2$-4:2 FTS (169%), $^{13}C_2$-6:2 FTS (157%), $^{13}C_2$-8:2 FTS (194%), d_3-NMeFOSA (13%), d_5-NEtFOSA (7%), d_7-N-methyl perfluorooctanesulfonamidoethanol (d_7-NMeFOSE [17%]), and d_9-NEtFOSE (8%) were outside limits in the analysis of sample F-BIOB08_LBT01_20240522. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect NEtFOSA and NEtFOSE results from the associated sample due to extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detect NMeFOSA and NMeFOSE results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-4:2 FTS (241%), $^{13}C_2$-6:2 FTS (219%), $^{13}C_2$-8:2 FTS (162%), d_3-NMeFOSA (13%), and d_5-NEtFOSA (11%) were outside limits in the analysis of sample F-BIOC06_CTS01_20240521. Data limitations are summarized below.

  - WSP UJ qualified the non-detect NMeFOSA and NEtFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.

- Recoveries of the EISs $^{13}C_2$-4:2 FTS (207%), $^{13}C_2$-6:2 FTS (191%), $^{13}C_2$-8:2 FTS (166%), d_3-NMeFOSA (11%), and d_5-NEtFOSA (10%) were outside limits in the analysis of sample F-BIOC09_CTS01_20240523. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NMeFOSA and NEtFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs d_3-NMeFOSA and d_5-NEtFOSA were low at 14% and 12%, respectively, in the analysis of sample F-BIOA10_BLB01_20240818. WSP UJ qualified the non-detect NMeFOSA and NEtFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-4:2 FTS (8%), $^{13}C_4$-perfluorobutanoic acid (PFBA [4%]), $^{13}C_5$-PFHxA (17%), $^{13}C_5$-perfluoropentanoic acid (PFPeA [10%]), and d_5-NEtFOSA (15%) were low in the analysis of sample F-BIOA10_LBT01_20240818. Data limitations are summarized below.
  - WSP R qualified the non-detect 4:2 FTS and PFBA results from the associated sample due to extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detect 3:3 FTCA, 3-perfluoropentyl propanoic acid (5:3 FTCA), 7:3 FTCA, NEtFOSA, nonafluoro-3,6-dioxaheptanoic acid (NFDHA), perfluoro(2-ethoxyethane)sulfonic acid (PFEESA), PFHxA, PFMBA, PFMPA, and PFPeA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-6:2 FTS (157%), d_3-NMeFOSA (13%), and d_5-NEtFOSA (11%) were outside limits in the analysis of sample F-BIOC10_BLB01_20240817. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NMeFOSA and NEtFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 6:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_2$-PFDoDA (19%), $^{13}C_2$-PFTeDA (18%), $^{13}C_4$-PFBA (19%), and d_5-NEtFOSA (16%) were low in the analysis of sample F-BIOC10_LBT01_20240818. WSP UJ qualified the non-detect PFDoDA, PFTeDA, PFTrDA, PFBA, and NEtFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 198% in the analysis of sample F-BIOB01_CTS01_20240522. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs $^{13}C_2$-4:2 FTS and $^{13}C_2$-6:2 FTS were high at 223% and 219%, respectively, in the analysis of sample F-BIOCS01_CTS01_20240523. 4:2 FTS and 6:2 FTS were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-6:2 FTS and $^{13}C_4$-perfuoroheptanoic acid (PFHpA) and were high at 151% and 157%, respectively, in the analysis of sample F-BIOB10_BLB01_20240817. 6:2 FTS and PFHpA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-6:2 FTS and $^{13}C_4$-PFHpA were high at 168% and 152%, respectively, in the analysis of sample F-BIOC11_BLB02_20240818. 6:2 FTS and PFHpA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.

7.1.14 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exception:

- Recoveries of the NISs $^{13}C_2$-perfluorodecanoic acid (PFDA [33%]), $^{13}C_2$-PFHxA (41%), $^{13}C_3$-PFBA (49%), $^{13}C_4$-perfluorooctanoic acid (PFOA [34%]), $^{13}C_4$-PFOS (47%), $^{13}C_5$-perfluorononanoic acid (PFNA [31%]), and $^{18}O_2$-perfluorohexanesulfonic acid (PFHxS [30%]) recoveries were low in the analysis of sample F-BIOA02_LBT01_20240521. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA, NEtFOSE, NMeFOSA, and PFDoDA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$-PFDA (22%), $^{13}C_2$-PFHxA (32%), $^{13}C_4$-PFOA (20%), $^{13}C_4$-PFOS (30%), $^{13}C_5$-PFNA (16%), and $^{18}O_2$-PFHxS (18%) were low in the analysis of sample F-BIOA07_LBT01_20240522. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 4:2 FTS, 6:2 FTS, 8:2 FTS, 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, 4,8-dioxa-3H-perfluorononanoic acid, hexafluoropropylene oxide dimer acid, NEtFOSA, N-ethyl perfluorooctanesulfonamidoacetic acid, NEtFOSE, PFBS, perfluoropentanesulfonic acid (PFPeS), PFHxS, NMeFOSA, N-methyl perfluorooctanesulfonamidoacetic acid, NMeFOSE, PFDA, PFDoDA, PFDoS, perfluorodecanesulfonic acid, perfluoroheptanesulfonic acid, PFNA, perfluorononanesulfonic acid, PFOA, PFOS, perfluorooctanesulfonamide, PFTeDA, PFTrDA, and perfluoroundecanoic acid (PFUnA) results from the associated sample due to low NIS recoveries. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recovery of the NISs $^{13}C_2$-PFDA (33%), $^{13}C_4$-PFOA (45%), $^{13}C_4$-PFOS (34%), and $^{13}C_5$-PFNA (33%) were low in the analysis of sample F-BIOB01_CTS01_20240522. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$-PFDA (17%), $^{13}C_2$-PFHxA (24%), $^{13}C_3$-PFBA (49%), $^{13}C_4$-PFOA (14%), $^{13}C_4$-PFOS (34%), $^{13}C_5$-PFNA (17%), and $^{18}O_2$-PFHxS (16%) were low in the analysis of sample F-BIOB08_LBT01_20240522. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 4:2 FTS, 6:2 FTS, 8:2 FTS, PFBS, PFPeS, PFHxS, PFHpA, PFHxA, 5:3 FTCA, 7:3 FTCA, NFDHA, PFEESA, PFPeA, 3:3 FTCA, PFMPA, PFMBA, PFDA, PFDoDA, PFNA, PFOA, PFTeDA, PFTrDA, and PFUnA results from the associated sample due to low NIS recoveries. (UJ, NISL)
  - WSP UJ qualified the NMeFOSA and NMeFOSE results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - The NEtFOSA and NEtFOSE results in the associated sample were previously rejected due to extremely low EIS recoveries and the data was not further qualified based on NIS recoveries.
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$-PFDA (37%), $^{13}C_4$-PFOS (43%), $^{13}C_5$-PFNA (36%), and $^{18}O_2$-PFHxS (41%) were low in the analysis of sample F-BIOC06_CTS01_20240521. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.

- Recoveries of the NISs $^{13}C_2$-PFDA (36%), $^{13}C_4$-PFOA (44%), $^{13}C_4$- PFOS (41%), $^{13}C_5$-PFNA (37%), and $^{18}O_2$-PFHxS (46%) were low in the analysis of sample F-BIOC09_CTS01_20240523. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$-PFDA (36%), $^{13}C_4$-PFOA (44%), $^{13}C_4$-PFOS (39%), $^{13}C_5$-PFNA (39%), and $^{18}O_2$-PFHxS (43%) were low in the analysis of sample F-BIOCS01_CTS01_20240523. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 43% in the analysis of sample F-BIOA10_BLB01_20240818. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$-PFDA (28%), $^{13}C_2$-PFHxA (22%), $^{13}C_3$-PFBA (31%), $^{13}C_4$-PFOA (22%), $^{13}C_4$-PFOS (43%), $^{13}C_5$-PFNA (26%), and $^{18}O_2$-PFHxS (43%) were low in the analysis of sample F-BIOA10_LBT01_20240818. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, NFDHA, PFDA, PFDoDA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, PFNA, PFOA, PFPeA, PFTeDA, PFTrDA, and PFUnA results from the associated sample due to extremely low NIS recoveries. (UJ, NISL)
  - WSP UJ qualified the NEtFOSA result from the associated sample due to low NIS recovery because the associated EIS recovery was also low. (UJ, NISL)
  - The 4:2 FTS and PFBA results in the associated sample were previously rejected due to extremely low EIS recoveries and the data was not further qualified based on NIS recoveries.
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs $^{13}C_2$- PFDA (43%), $^{13}C_2$-PFHxA (22%), $^{13}C_3$-PFBA (47%), $^{13}C_4$-PFOA (29%), and $^{13}C_5$-PFNA (41%) were low in the analysis of sample F-BIOC10_LBT01_20240818. Data limitations are summarized below.
  - WSP UJ qualified the non-detect 3:3 FTCA, 5:3 FTCA, 7:3 FTCA, NFDHA, PFEESA, PFHpA, PFHxA, PFMBA, PFMPA, PFOA, and PFPeA results from the associated sample due to extremely low NIS recoveries. (UJ, NISL)
  - WSP UJ qualified the PFBA, PFDODA, PFTEA, and PFTRIA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 41% in the analysis of sample F-BIOB10_BLB01_20240817. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 41% in the analysis of sample F-BIOC10_BLB01_20240817. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recovery of the NIS $^{13}C_2$-PFHxA was low at 47% in the analysis of sample F-BIOC11_BLB02_20240818. Recoveries of the EISs associated with the associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.

7.1.15 ION RATIOS

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV.

7.1.16 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.17 DATA REPORTING AND ANALYTICAL PROCEDURES

Batelle J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Batelle's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP did not collect field duplicates with the samples reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 600 target analyte results from the field sample during this validation. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 5 records (0.83%) due to extremely low EIS recoveries.
- J: WSP J qualified 8 records (1.3%) due to detected concentrations less than the LOQ.
- UJ: WSP UJ qualified 103 records (17%) due to low MS, EIS, and/or NIS recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount
24-0507	A02_CTS01	F-BIOA02_CTS01_20240521	C4351-FS	5/21/2024	TP	N	40
	C03_CTS01	F-BIOC03_CTS01_20240521	C4356-FS	5/21/2024	TP	N	40
24-0610	A02	F-BIOA02_LBT01_20240521	C4352-FS	5/21/2024	TP	N	40
	A07	F-BIOA07_LBT01_20240522	C4353-FS	5/22/2024	TP	N	40
	B01	F-BIOB01_CTS01_20240522	C4354-FS	5/22/2024	TP	N	40
	B08	F-BIOB08_LBT01_20240522	C4355-FS	5/22/2024	TP	N	40
	C06	F-BIOC06_CTS01_20240521	C4357-FS	5/21/2024	TP	N	40
	C09	F-BIOC09_CTS01_20240523	C4358-FS	5/23/2024	TP	N	40
	CS01	F-BIOCS01_CTS01_20240523	C4361-FS	5/23/2024	TP	N	40
24-0666	A10	F-BIOA10_BLB01_20240818	C6860-FS	8/18/2024	TP	N	40
		F-BIOA10_LBT01_20240818	C6861-FS	8/18/2024	TP	N	40
	B10	F-BIOB10_BLB01_20240817	C6862-FS	8/17/2024	TP	N	40
	C10	F-BIOC10_BLB01_20240817	C6863-FS	8/17/2024	TP	N	40
		F-BIOC10_LBT01_20240818	C6864-FS	8/18/2024	TP	N	40
	C11	F-BIOC11_BLB02_20240818	C6865-FS	8/18/2024	TP	N	40

Notes:

N = Normal Field Sample

TP = Plant Tissue

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/2/24
Checked by: CR
Date: 1/7/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program - Stage 2B - Report 1
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0507		24-0610						
			Location	A02_CTS01	C03_CTS01	A02	A07	B01	B08	C06	C09	CS01
			Sample Date	5/21/2024	5/21/2024	5/21/2024	5/22/2024	5/22/2024	5/22/2024	5/21/2024	5/23/2024	5/23/2024
			Sample ID	F-BIOA02_CTS01_20240521	F-BIOC03_CTS01_20240521	F-BIOA02_LBT01_20240521	F-BIOA07_LBT01_20240522	F-BIOB01_CTS01_20240522	F-BIOB08_LBT01_20240522	F-BIOC06_CTS01_20240521	F-BIOC09_CTS01_20240523	F-BIOCS01_CTS01_2024052
			QC Code	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.112 U	0.112 U	0.415 J	0.244 J	0.112 U	0.135 U	0.112 U	0.112 U	0.112 U
		Perfluoropentanoic acid (PFPeA)	NG/G	0.108 U	0.108 U	0.278 U	0.201 U	0.342	0.13 UJ	0.633	0.658	0.238
		Perfluorohexanoic acid (PFHxA)	NG/G	0.074 U	0.074 U	0.191 U	0.138 U	0.074 U	0.0892 UJ	0.0739 U	0.074 U	0.0739 U
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.0679 J	0.07 U	0.18 U	0.131 U	0.07 U	0.0843 UJ	0.0699 U	0.07 U	0.0699 U
		Perfluorooctanoic acid (PFOA)	NG/G	0.385	0.05 U	0.129 U	0.0933 UJ	0.05 U	0.0602 UJ	0.05 U	0.05 U	0.05 U
		Perfluorononanoic acid (PFNA)	NG/G	0.619	0.072 U	0.186 U	0.134 UJ	0.072 U	0.0867 UJ	0.0719 U	0.072 U	0.0719 U
		Perfluorodecanoic acid (PFDA)	NG/G	0.109	0.078 U	0.201 U	0.146 UJ	0.078 U	0.094 UJ	0.0779 U	0.078 U	0.0779 U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.217	0.06 U	0.155 U	0.112 UJ	0.06 U	0.0723 UJ	0.0599 U	0.06 U	0.0599 U
		Perfluorododecanoic acid (PFDoA)	NG/G	0.0458 J	0.048 U	0.124 UJ	0.0896 UJ	0.048 U	0.0578 UJ	0.048 U	0.048 U	0.048 U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.0696 J	0.078 U	0.201 U	0.146 UJ	0.078 U	0.094 UJ	0.0779 U	0.078 U	0.0779 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.062 U	0.062 U	0.16 U	0.116 UJ	0.062 U	0.0747 UJ	0.0619 U	0.062 U	0.0619 U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.068 U	0.068 U	0.175 U	0.127 UJ	0.068 U	0.0819 UJ	0.0679 U	0.068 U	0.0679 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.04 U	0.04 U	0.103 U	0.0746 UJ	0.04 U	0.0482 UJ	0.04 U	0.04 U	0.04 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.06 U	0.0675 J	0.155 U	0.112 UJ	0.06 U	0.0723 UJ	0.0599 U	0.06 U	0.0599 U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.07 U	0.07 U	0.18 U	0.131 UJ	0.07 U	0.0843 U	0.0699 U	0.07 U	0.0699 U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	0.078 U	0.115	0.201 U	0.146 UJ	0.078 U	0.094 U	0.0779 U	0.078 U	0.0779 U
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.079 U	0.079 U	0.204 U	0.147 UJ	0.079 U	0.0952 U	0.0789 U	0.079 U	0.0789 U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.066 U	0.066 U	0.17 U	0.123 UJ	0.066 U	0.0795 U	0.0659 U	0.066 U	0.0659 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.038 U	0.038 U	0.0979 U	0.0709 UJ	0.038 U	0.0458 U	0.038 U	0.038 UJ	0.038 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	0.264 U	0.264 U	0.68 U	0.493 UJ	0.264 U	0.318 UJ	0.264 U	0.264 U	0.264 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	1.47	0.111 J	0.418 U	0.302 UJ	0.162 U	0.195 UJ	0.162 U	0.162 U	0.162 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.16 U	0.16 U	0.412 U	0.299 UJ	0.16 U	0.193 UJ	0.16 U	0.16 U	0.16 U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.032 U	0.032 U	0.0825 U	0.0597 UJ	0.032 U	0.0386 U	0.032 U	0.032 U	0.032 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.02 UJ	0.02 U	0.0515 UJ	0.0373 UJ	0.02 U	0.0241 UJ	0.02 UJ	0.02 UJ	0.02 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.068 R	0.068 UJ	0.175 UJ	0.127 UJ	0.068 U	0.0819 R	0.0679 UJ	0.068 UJ	0.0679 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.074 U	0.074 U	0.191 U	0.138 UJ	0.074 U	0.0892 U	0.0739 U	0.074 U	0.0739 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.076 U	0.076 U	0.196 U	0.142 UJ	0.076 U	0.0916 U	0.0759 U	0.076 U	0.0759 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	0.382 U	0.382 U	0.985 U	0.713 UJ	0.382 U	0.46 UJ	0.382 U	0.382 U	0.382 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	0.4 U	0.4 U	1.03 UJ	0.746 UJ	0.4 U	0.482 R	0.4 U	0.4 U	0.4 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.232 U	0.232 U	0.598 U	0.433 UJ	0.232 U	0.28 U	0.232 U	0.232 U	0.232 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.18 U	0.18 U	0.464 U	0.336 UJ	0.18 U	0.217 U	0.18 U	0.18 U	0.18 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.138 U	0.138 U	0.356 U	0.257 U	0.138 U	0.166 UJ	0.138 U	0.138 U	0.138 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.108 U	0.108 U	0.278 U	0.201 U	0.108 U	0.13 UJ	0.108 U	0.108 U	0.108 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.042 U	0.042 U	0.108 U	0.0784 U	0.042 U	0.0506 UJ	0.042 U	0.042 U	0.042 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	0.25 U	0.25 U	0.644 U	0.466 UJ	0.25 U	0.301 U	0.25 U	0.25 U	0.25 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.238 U	0.238 U	0.613 U	0.444 UJ	0.238 U	0.287 U	0.238 U	0.238 U	0.238 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.07 U	0.07 U	0.18 U	0.131 U	0.07 U	0.0843 UJ	0.0699 U	0.07 U	0.0699 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.098 U	0.098 U	0.253 U	0.183 U	0.098 U	0.118 UJ	0.0979 U	0.098 U	0.0979 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	1.37 U	1.37 U	3.53 U	2.55 U	1.37 U	1.65 UJ	1.37 U	1.37 U	1.37 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	0.74 U	0.74 U	1.91 U	1.38 U	0.74 U	0.892 UJ	0.739 U	0.74 U	0.739 U

Prepared by: AKN
Date: 3/26/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program - Stage 2B - Report 1
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0666																	
			Location	A10				B10		C10				C11							
			Sample Date	8/18/2024				8/17/2024		8/17/2024		8/18/2024		8/18/2024							
			Sample ID	F-BIOA10_BLB01_20240818		F-BIOA10_LBT01_20240818		F-BIOB10_BLB01_20240817		F-BIOC10_BLB01_20240817		F-BIOC10_LBT01_20240818		F-BIOC11_BLB02_20240818							
			QC Code	N		N		N		N		N		N							
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier						
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.0904	J	0	R	0.294	U	0.112	U	0.112	UJ	0.467	U						
		Perfluoropentanoic acid (PFPeA)	NG/G	0.108	U	0.108	UJ	0.283	U	0.108	U	0.108	UJ	0.45	U						
		Perfluorohexanoic acid (PFHxA)	NG/G	0.074	U	0.0739	UJ	0.194	U	0.0739	U	0.0738	UJ	0.308	U						
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.07	U	0.0699	UJ	0.184	U	0.0699	U	0.0698	UJ	0.292	U						
		Perfluorooctanoic acid (PFOA)	NG/G	0.05	U	0.0499	UJ	0.131	U	0.05	U	0.0499	UJ	0.208	U						
		Perfluorononanoic acid (PFNA)	NG/G	0.072	U	0.0719	UJ	0.189	U	0.0719	U	0.0718	U	0.3	U						
		Perfluorodecanoic acid (PFDA)	NG/G	0.078	U	0.0778	UJ	0.205	U	0.0779	U	0.0778	U	0.325	U						
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.06	U	0.0599	UJ	0.157	U	0.0599	U	0.0598	U	0.25	U						
		Perfluorododecanoic acid (PFDoA)	NG/G	0.048	U	0.0479	UJ	0.126	U	0.048	U	0.0479	UJ	0.2	U						
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.078	U	0.0778	UJ	0.205	U	0.0779	U	0.0778	UJ	0.325	U						
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.062	U	0.0619	UJ	0.163	U	0.0619	U	0.0618	UJ	0.258	U						
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.068	U	0.0679	U	0.178	U	0.0679	U	0.0678	U	0.283	U						
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.04	U	0.0399	U	0.105	U	0.04	U	0.0399	U	0.167	U						
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.06	U	0.0599	U	0.157	U	0.0599	U	0.0598	U	0.25	U						
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.07	U	0.0699	U	0.184	U	0.0699	U	0.0698	U	0.292	U						
		Perfluorooctanesulfonic acid (PFOS)	NG/G	0.078	U	0.0778	U	0.205	U	0.0779	U	0.0778	U	0.325	U						
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.079	U	0.0788	U	0.207	U	0.0789	U	0.0788	U	0.329	U						
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.066	U	0.0659	U	0.173	U	0.0659	U	0.0658	U	0.275	U						
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.038	U	0.0379	U	0.0997	U	0.038	U	0.0379	U	0.158	U						
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	0.264	U	0	R	0.693	U	0.264	U	0.263	U	1.1	U						
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	0.162	U	0.162	U	0.425	U	0.162	U	0.162	U	0.675	U						
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.16	U	0.16	U	0.42	U	0.16	U	0.16	U	0.667	U						
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.032	U	0.0319	U	0.084	U	0.032	U	0.0319	U	0.133	U						
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.02	UJ	0.02	U	0.0525	U	0.02	UJ	0.0199	U	0.0833	U						
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.068	UJ	0.0679	UJ	0.178	U	0.0679	UJ	0.0678	UJ	0.283	U						
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.074	U	0.0739	U	0.194	U	0.0739	U	0.0738	U	0.308	U						
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.076	U	0.0758	U	0.199	U	0.0759	U	0.0758	U	0.317	U						
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	0.382	U	0.381	U	1	U	0.382	U	0.381	U	1.59	U						
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	0.4	U	0.399	U	1.05	U	0.4	U	0.399	U	1.67	U						
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.232	U	0.232	U	0.609	U	0.232	U	0.231	U	0.967	U						
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.18	U	0.18	U	0.472	U	0.18	U	0.179	U	0.75	U						
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.138	U	0.138	UJ	0.362	U	0.138	U	0.138	UJ	0.575	U						
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.108	U	0.108	UJ	0.283	U	0.108	U	0.108	UJ	0.45	U						
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.042	U	0.0419	UJ	0.11	U	0.042	U	0.0419	UJ	0.175	U						
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	0.25	U	0.25	U	0.656	U	0.25	U	0.249	U	1.04	U						
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.238	U	0.238	U	0.625	U	0.238	U	0.237	U	0.992	U						
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.07	U	0.0699	UJ	0.184	U	0.0699	U	0.0698	UJ	0.292	U						
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.098	U	0.0978	UJ	0.257	U	0.0979	U	0.0977	UJ	0.408	U						
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	1.37	U	1.37	UJ	3.59	U	1.37	U	1.36	UJ	5.7	U						
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	0.74	U	0.739	UJ	1.94	U	0.739	U	0.738	UJ	3.08	U						

Prepared by: AKN
Date: 3/26/25
Checked by:
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0507	E1633DR	T	C4351-FS	F-BIOA02_CTS01_20240521	Perfluoroheptanoic acid (PFHpA)	0.0679	J	0.0679	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0458	J	0.0458	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0696	J	0.0696	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	R	EISL	NG/G
			C4356-FS	F-BIOC03_CTS01_20240521	Perfluorohexanesulfonic acid (PFHxS)	0.0675	J	0.0675	J	TR	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.111	J	0.111	J	TR	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334		EISL	NG/G
24-0610	E1633DR	T	C4352-FS	F-BIOA02_LBT01_20240521	Perfluorobutanoic acid (PFBA)	0.415	J	0.415	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0613	U	0.0613	UJ	EISL, NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0237	U	0.0237	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0861	U	0.0861	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.515	U	0.515	UJ	EISL, NISL	NG/G
			C4353-FS	F-BIOA07_LBT01_20240522	Perfluorobutanoic acid (PFBA)	0.244	J	0.244	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.0466	U	0.0466	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.066	U	0.066	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.072	U	0.072	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.056	U	0.056	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0444	U	0.0444	UJ	NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0724	U	0.0724	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0578	U	0.0578	UJ	NISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.0627	U	0.0627	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.036	U	0.036	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.0552	U	0.0552	UJ	NISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.0642	U	0.0642	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0610	E1633DR	T	C4353-FS	F-BIOA07_LBT01_20240522	Perfluorooctanesulfonic acid (PFOS)	0.0713	U	0.0713	UJ	NISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0735	U	0.0735	UJ	NISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.0612	U	0.0612	UJ	NISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0344	U	0.0344	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.246	U	0.246	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.151	U	0.151	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.149	U	0.149	UJ	NISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0282	U	0.0282	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0171	U	0.0171	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0623	U	0.0623	UJ	EISL, NISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0683	U	0.0683	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0705	U	0.0705	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.356	U	0.356	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.373	U	0.373	UJ	NISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.215	U	0.215	UJ	NISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.167	U	0.167	UJ	NISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.232	U	0.232	UJ	NISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.221	U	0.221	UJ	NISL	NG/G

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0610	E1633DR	T	C4355-FS	F-BIOB08_LBT01_20240522	Perfluoropentanoic acid (PFPeA)	0.0641	U	0.0641	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0443	U	0.0443	UJ	NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0422	U	0.0422	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0301	U	0.0301	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0427	U	0.0427	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0465	U	0.0465	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0361	U	0.0361	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0287	U	0.0287	UJ	NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0467	U	0.0467	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0373	U	0.0373	UJ	NISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.0405	U	0.0405	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0233	U	0.0233	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.0357	U	0.0357	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.159	U	0.159	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.0976	U	0.0976	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0959	U	0.0959	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0111	U	0.0111	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0402	U	0.0402	R	EISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.23	U	0.23	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.241	U	0.241	R	EISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0824	U	0.0824	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0648	U	0.0648	UJ	NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0248	U	0.0248	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0610	E1633DR	T	C4355-FS	F-BIOB08_LBT01_20240522	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0419	U	0.0419	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0581	U	0.0581	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.824	U	0.824	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.446	U	0.446	UJ	NISL	NG/G
			C4357-FS	F-BIOC06_CTS01_20240521	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00917	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL, NISL	NG/G
			C4358-FS	F-BIOC09_CTS01_20240523	Perfluorododecanesulfonic acid (PFDoS)	0.0185	U	0.0185	UJ	MSL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL, NISL	NG/G
24-0666	E1633DR	T	C6860-FS	F-BIOA10_BLB01_20240818	Perfluorobutanoic acid (PFBA)	0.0904	J	0.0904	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL	NG/G
			C6861-FS	F-BIOA10_LBT01_20240818	Perfluorobutanoic acid (PFBA)	0.0555	U	0.0555	R	EISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.0531	U	0.0531	UJ	EISL, NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0367	U	0.0367	UJ	EISL, NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0349	U	0.0349	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.025	U	0.025	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0353	U	0.0353	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0385	U	0.0385	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0299	U	0.0299	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0238	U	0.0238	UJ	NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0387	U	0.0387	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0309	U	0.0309	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.131	U	0.131	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	UJ	EISL, NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0666	E1633DR	T	C6861-FS	F-BIOA10_LBT01_20240818	Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0683	U	0.0683	UJ	EISL, NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0537	U	0.0537	UJ	EISL, NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0206	U	0.0206	UJ	EISL, NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0347	U	0.0347	UJ	EISL, NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0481	U	0.0481	UJ	EISL, NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.683	U	0.683	UJ	EISL, NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.369	U	0.369	UJ	EISL, NISL	NG/G
			C6863-FS	F-BIOC10_BLB01_20240817	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00917	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL	NG/G
			C6864-FS	F-BIOC10_LBT01_20240818	Perfluorobutanoic acid (PFBA)	0.0554	U	0.0554	UJ	EISL, NISL	NG/G
					Perfluoropentanoic acid (PFPeA)	0.053	U	0.053	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0367	U	0.0367	UJ	NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0349	U	0.0349	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0249	U	0.0249	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0237	U	0.0237	UJ	EISL, NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0387	U	0.0387	UJ	EISL, NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0309	U	0.0309	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	UJ	EISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0682	U	0.0682	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0536	U	0.0536	UJ	NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0205	U	0.0205	UJ	NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0347	U	0.0347	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0481	U	0.0481	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.682	U	0.682	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.369	U	0.369	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Spring and Summer 2024 - SDGs 24-0507, 24-0610, 24-0666

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NJ = Analyte has been tentatively identified and concentration is estimated

EISL = Low extracted internal standard recovery

NISL = Low non-extracted internal standard recovery

MSL = Low MS recovery. Result may be biased low.

NG/G = nanograms per gram

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

DATA VALIDATION REPORT

LORING PFAS RI
2024 HUMAN HEALTH FORAGING SAMPLING PROGRAM
FORMER LORING AIR FORCE BASE, LIMESTONE, MAINE
SUMMER 2024 - SDG 24-0773
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

JANUARY 22, 2025

DATA VALIDATION REPORT

LORING PFAS RI
FORMER LORING AIR FORCE BASE
WSP PROJECT # US-EI-775361701

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
5:3 FTCA	3-perfluoropentyl propanoic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
Batelle	Batelle Norwell Operations
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomer sulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFDA	perfluorodecanoic acid
PFDoDA	perfluorododecanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFNA	perfluorononanoic acid
PFPeA	perfluoropentanoic acid
PFTeDA	perfluorotetradecanoic acid
PFUnA	perfluoroundecanoic acid

QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 13 tissue samples between 10 and 11 September 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to Batelle Norwell Operations (Batelle), located in Norwell, Massachusetts, where they were received on 13 September 2024. Batelle assigned the samples to sample delivery group 24-0773 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) Stage 2B validation on 100 percent (%) of Batelle's data for the samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms. Stage 2B validation does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ICS;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by PFAS recovery in laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MS/MS duplicates (MSDs);

- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EISL	Low EIS recovery.
EMPC	Ion transition ratio is outside of expected limits.
LCH	High LCS recovery. Result may be biased high.
NISL	Low NIS recovery.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report are considered usable with the limitations and exceptions described in Sections 7.1 through 8.0. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Batelle may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 ION TRANSITIONS

Parent, quantification, and confirmation ion masses used for the analysis of the samples reviewed in this report matched the ions specified in EPA Method 1633 Table 10.

7.1.4 INITIAL CALIBRATION COMPLIANCE

Initial calibrations relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.5 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%.

7.1.6 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.7 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.8 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.9 LABORATORY AND CALIBRATION BLANK DETECTIONS

Target analytes were not detected in the laboratory and calibration blanks associated with the sample reviewed in this report.

7.1.10 LABORATORY CONTROL SAMPLE ACCURACY

Low-level LCS (LLCS) and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the quality assurance project plan (QAPP)-specified 40 to 150% limits, with the following exceptions:

- Perfluorohexanoic acid (PFHxA [160%]), 3-perfluoropentyl propanoic acid (5:3 FTCA [154%]), and 3-perfluoroheptyl propanoic acid (7:3 FTCA [168%]) recoveries were high in the LLCS associated with the analysis of the samples reviewed in this report. Data limitations are summarized below.
  - WSP J+ qualified the detected PFHxA result from sample F-BIOC13_CTR01_20240910 due to potential high analytical bias. (J+, LCH)
  - PFHxA was not detected in the remaining associated samples, 5:3 FTCA and 7:3 FTCA were not detected in any of the associated samples, and data usability is not adversely affected by potential high analytical bias.
- 5:3 FTCA and 7:3 FTCA recoveries were high at 204% and 202%, respectively, in the LCS associated with the analysis of the samples reviewed in this report. 5:3 FTCA and 7:3 FTCA were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

7.1.11 MATRIX SPIKE ACCURACY AND PRECISION

Batelle did not perform MS and MSD analyses on the samples reviewed in this report.

7.1.12 LABORATORY DUPLICATE PRECISION

Batelle did not perform duplicate analyses on the samples reviewed in this report.

7.1.13 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the QAPP-specified 20 to 150% limits, with the following exceptions:

- Recoveries of the EISs d_5-N-ethyl perfluorooctanesulfonamide (d_5-NEtFOSA [11%]), d_3-N-methyl perfluorooctanesulfonamide (d_3-NMeFOSA [10%]), and d_9-N-ethyl perfluorooctanesulfonamidoethanol (d_9-NEtFOSE [9%]) were low in the analysis of sample F-BIOA15_CTR01_20240911. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect perfluorooctanesulfonamide (NEtFOSA) and N-methyl perfluorooctanesulfonamide (NMeFOSA) results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs d_5-NEtFOSA and d_3-NMeFOSA were low at 9% and 12%, respectively, in the analysis of sample F-BIOA15_CTR02_20240911. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect NEtFOSA result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect NMeFOSA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs 13C6-perfluorodecanoic acid (13C6-PFDA [18%]), 13C7-perfluoroundecanoic acid (13C7-PFUnA [6%]), 13C8-PFOS (11%), D3-NMeFOSA (3%), D5-NEtFOSA (2%), d5-N-ethyl perfluorooctanesulfonamidoacetic acid (d5-NEtFOSAA [16%]) were low in the analysis of sample F-BIOB12_CTR01_20240910. Additionally, the EISs 13C2-perfluorododecanoic acid (13C2-PFDoDA), 13C2-perfluorotetradecanoic acid (13C2-PFTeDA), D7-N-methyl perfluorooctanesulfonamidoethanol (D7-NMeFOSE), and D9-NEtFOSE failed to recover. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect perfluorododecanoic acid (PFDoDA), perfluorotridecanoic acid (PFTeDA), perfluoroundecanoic acid (PFUnA), NEtFOSA, NMeFOSA, NMeFOSE, and NEtFOSE results from the associated sample due to extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detect perfluorodecanoic acid (PFDA), perfluorodecanesulfonic acid (PFDS), perfluorododecanesulfonic acid ((PFDoS), perfluoroheptanesulfonic acid (PFHpS), perfluorononanesulfonic acid (PFNS), perfluorooctanesulfonic acid (PFOS), and NEtFOSAA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISs d_5-NEtFOSA (7%), d_3-NMeFOSA (6%), and d_9-NEtFOSE (10%) were low in the analysis of sample F-BIOC12_CTR01_20240910. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect NEtFOSA and NMEFOSA results from the associated sample due to extremely low EIS recoveries. (R, EISL)
  - WSP UJ qualified the non-detect NEtFOSE result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs 13C2-6:2 fluorotelomer sulfonic acid (FTS [153%]), D3-MeFOSA (10%), D5-EtFOSA (6%), and D9-EtFOSE (14%) were outside limits in the analysis of sample FBIOCS01_CTR01_20240911. Data limitations are summarized below.
  - WSP R qualified and rejected the non-detect NEtFOSA result from the associated sample due to extremely low EIS recovery. (R, EISL)
  - WSP UJ qualified the non-detect NEtFOSE and NMeFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 6:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs d_5-NEtFOSA and d_3-NMeFOSA were both low at 10% in the analysis of sample F-BIOA12_CTR01_20240910. WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)

- Recoveries of the EISs d_5-NEtFOSA and d_3-NMeFOSA were low at 15% and 16%, respectively, in the analysis of sample F-BIOA12_CTR02_20240910. WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recovery of the EIS $^{13}C_2$-PFDoDA was low at 14% in the analysis of sample F-BIOA13_LBT01_20240910. WSP UJ qualified the non-detect PFDoDA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs $^{13}C_2$-PFDoDA and $^{13}C_8$-perfluorooctanesulfonamide ($^{13}C_8$-PFOSA) were low at 10% and 16%, respectively, in the analysis of sample F-BIOA14_LBT01_20240911. WSP UJ qualified the non-detect PFDoDA and perfluorooctane sulfonamide (PFOSA) results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recoveries of the EISS 13C2-6:2 FTS (161%), d3-NMeFOSA (14%), and d5-NEtFOSA (17%) were outside limits in the analysis of sample F-BIOC13_CTR01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
  - 6:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recoveries of the EISs D3-MeFOSA and D5-EtFOSA were low at 15% and 16%, respectively, in the analysis of sample F-BIOC14_CTR01_20240910. WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low EIS recoveries. (UJ, EISL)
- Recovery of the EIS 13C2-PFDoDA was low at 12% in the analysis of sample F-BIOC15_LBT01_20240911. WSP UJ qualified the non-detect PFDoDA result from the associated sample due to low EIS recovery. (UJ, EISL)
- Recoveries of the EISs 13C2-8:2FTS and 13C5-perfluoropentanoic acid (PFPeA) were high at 255% and 178%, respectively, in the analysis of sample F-BIOB13_LBT01_20240910. 3-perfluoropropyl propanoic acid, 8:2 FTS, perfluoro-4-methoxybutanoic acid, perfluoro-3-methoxypropanoic acid, and PFPeA were not detected in the associated sample and data usability is not adversely affected by high EIS recoveries.

7.1.14 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exception:

- Recoveries of the NISs 13C2-PFHxA (43%), 13C4-perfluorooctanoic acid (13C4-PFOA [46%]), 13C5-perfluorononanoic acid (13C5-PFNA [43%]), and 13C4-PFOS (44%) were low in the analysis of sample F-BIOA12_CTR02_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C3-perfluorobutanoic acid (13C3-PFBA [37%]), 13C2-PFHxA (9%), 13C4-PFOA (11%), 13C5-PFNA (13%), 13C2-PFDA (16%), 18O2-perfluorohexanesulfonic acid (18O2-PFHxS [17%]), and 13C4-PFOS (23%) were low in the analysis of sample F-BIOA13_LBT01_20240910. Data limitations are summarized below.
  - WSP UJ qualified all non-detect results except for PFBA from the associated sample due to low NIS recoveries. (UJ, EISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C2-PFHxA (9%), 13C4-PFOA (11%), 13C5-PFNA (11%), 13C2-PFDA (18%), 18O2-PFHxS (17%), and 13C4-PFOS (21%) were low in the analysis of sample F-BIOA14_LBT01_20240911. WSP UJ qualified all non-detect results except for PFBA from the associated sample due to low NIS recoveries. (UJ, NISL)

- Recoveries of the NISs 13C2-PFHxA (43%), 13C4-PFOA (44%), 13C5-PFNA (40%), 13C2-PFDA (48%), 18O2-PFHxS (46%), and 13C4-PFOS (48%) were low in the analysis of sample F-BIOA15_CTR01_20240911. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recoveries because the associated EIS recoveries were also low. (UJ, NISL)
  - The NEtFOSE result in the associated sample was previously rejected due to extremely low EIS recovery and the data was not further qualified based on low NIS recovery.
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C2-PFHxA (46%), 13C4-PFOA (48%), 13C5-PFNA (42%), and 13C4-PFOS (47%) were low in the analysis of sample F-BIOA15_CTR02_20240911. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NMeFOSA result from the associated sample due to low NIS recovery because the associated EIS recovery was also low. (UJ, NISL)
  - The NEtFOSE result in the associated sample was previously rejected due to extremely low EIS recovery and the data was not further qualified based on low NIS recovery.
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C3-PFBA (43%), 13C2-PFHxA (8%), 13C4-PFOA (8%), 13C5-PFNA (10%), 13C2-PFDA (13%), 18O2-PFHxS (15%), and 13C4-PFOS (17%) were low in the analysis of sample F-BIOB13_LBT01_20240910. Data limitations are summarized below.
  - WSP UJ qualified all non-detect results except for PFBA from the associated sample due to low NIS recoveries. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C5-PFNA and 13C4-PFOS were both low at 43% in the analysis of sample F-BIOC12_CTR01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSE result from the associated sample due to low NIS recovery because the associated EIS recovery was also low. (UJ, NISL)
  - The NEtFOSA and NMeFOSA results in the associated sample were previously rejected due to extremely low EIS recoveries and the data was not further qualified based on low NIS recoveries.
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C2-PFHxA (47%), 13C5-PFNA (38%), 13C2-PFDA (48%), 18O2-PFHxS (48%), and 13C4-PFOS (43%) were low in the analysis of sample F-BIOC13_CTR01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recovery because the associated EIS recoveries were also low. (UJ, NISL)
  - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C2-PFHxA (49%), 13C5-PFNA (47%), and 13C4-PFOS (47%) were low in the analysis of samples F-BIOC14_CTR01_20240910. Data limitations are summarized below.
  - WSP UJ qualified the non-detect NEtFOSA and NMeFOSA results from the associated sample due to low NIS recovery because the associated EIS recoveries were also low. (UJ, NISL)

    - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.

- Recoveries of the NISs 13C2-PFHxA (9%), 13C4-PFOA (11%), 13C5-PFNA (13%), 13C2-PFDA (19%), 18O2-PFHxS (16%), and 13C4-PFOS (20%) were low in the analysis of sample F-BIOC15_LBT01_20240911. Data limitations are summarized below.
    - WSP UJ qualified all non-detect results except for PFBA from the associated sample due to low NIS recoveries. (UJ, NISL)
    - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C5-PFNA and 13C4-PFOS were low at 49% and 47%, respectively, in the analysis of sample F-BIOCS01_CTR01_20240911. Data limitations are summarized below.
    - WSP UJ qualified the non-detect NEtFOSE and NMeFOSA results from the associated sample due to low NIS recovery because the associated EIS recoveries were also low. (UJ, NISL)
    - The NEtFOSA result in the associated sample was previously rejected due to extremely low EIS recovery and the data was not further qualified based on low NIS recovery.
    - Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.
- Recoveries of the NISs 13C2-PFHxA and 13C5-PFNA were low at 48% and 44%, respectively, in the analysis of sample F-BIOA12_CTR01_20240910. Recoveries of the EISs associated with the remaining associated analytes were within limits in the associated sample and no data were qualified based on low NIS recoveries.

7.1.15 ION RATIOS

Batelle I qualified data when ion transition ratios were outside the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV. WSP J qualified Batelle's I qualified results to indicate potential matrix interference or the presence of isomers in the sample with different ratios than present in the standard. (J, EMPC)

7.1.16 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.17 DATA REPORTING AND ANALYTICAL PROCEDURES

Batelle J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained Batelle's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP did not collect field duplicates with the samples reviewed in this report.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 520 target analyte results from the field sample during this validation. Final validated results are presented in Table 2 and results qualified during validation are presented in Table 3 with applicable reason codes

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- R: WSP R qualified and rejected 13 records (2.5%) due to extremely low EIS recoveries.
- J+: WSP J+ qualified one record (0.19%) due to high LCS recovery.
- J: WSP J qualified 22 records (4.2%) due to detected concentrations less than the LOQ or ion transition ratios outside of expected limits.
- UJ: WSP UJ qualified 177 records (34%) due to low EIS and/or NIS recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

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DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
24-0773	A12_CTR01	F-BIOA12_CTR01_20240910	C7819-FS	9/10/2024	TP	N	40
	A12_CTR02	F-BIOA12_CTR02_20240910	C7820-FS	9/10/2024	TP	N	40
	A13_LBT01	F-BIOA13_LBT01_20240910	C7821-FS	9/10/2024	TP	N	40
	A14_LBT01	F-BIOA14_LBT01_20240911	C7822-FS	9/11/2024	TP	N	40
	A15_CTR01	F-BIOA15_CTR01_20240911	C7823-FS	9/11/2024	TP	N	40
	A15_CTR02	F-BIOA15_CTR02_20240911	C7824-FS	9/11/2024	TP	N	40
	B12_CTR01	F-BIOB12_CTR01_20240910	C7825-FS	9/10/2024	TP	N	40
	B13_LBT01	F-BIOB13_LBT01_20240910	C7826-FS	9/10/2024	TP	N	40
	C12_CTR01	F-BIOC12_CTR01_20240910	C7827-FS	9/10/2024	TP	N	40
	C13_CTR01	F-BIOC13_CTR01_20240910	C7828-FS	9/10/2024	TP	N	40
	C14_CTR01	F-BIOC14_CTR01_20240910	C7829-FS	9/10/2024	TP	N	40
	C15_LBT01	F-BIOC15_LBT01_20240911	C7830-FS	9/11/2024	TP	N	40
	CS01_CTR01	F-BIOCS01_CTR01_20240911	C7831-FS	9/11/2024	TP	N	40

Notes:

N = Normal Field Sample

TP = Plant Tissue

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:12/2/24
Checked by: CR
Date: 1/7/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program - Stage 4 - Report 3
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0773								
			Location	A12_CTR01	A12_CTR02	A13_LBT01	A14_LBT01	A15_CTR01	A15_CTR02	B12_CTR01	B13_LBT01	C12_CTR01
			Sample Date	9/10/2024	9/10/2024	9/10/2024	9/11/2024	9/11/2024	9/11/2024	9/10/2024	9/10/2024	9/10/2024
			Sample ID	F-BIOA12_CTR01_20240910	F-BIOA12_CTR02_20240910	F-BIOA13_LBT01_20240910	F-BIOA14_LBT01_20240911	F-BIOA15_CTR01_20240911	F-BIOA15_CTR02_20240911	F-BIOB12_CTR01_20240910	F-BIOB13_LBT01_20240910	F-BIOC12_CTR01_20240910
			QC Code	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.112 U	0.112 U	0.459	0.156 J	0.112 U	0.112 U	0.112 U	0.898	0.112 U
		Perfluoropentanoic acid (PFPeA)	NG/G	0.108 U	0.108 U	0.135 UJ	0.135 UJ	0.108 U	0.0799 J	0.108 U	0.135 UJ	0.0677 J
		Perfluorohexanoic acid (PFHxA)	NG/G	0.074 U	0.0739 U	0.0925 UJ	0.0924 UJ	0.0739 U	0.0739 U	0.0739 U	0.0925 UJ	0.074 U
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.07 U	0.0699 U	0.0875 UJ	0.0874 UJ	0.0699 U	0.0699 U	0.0699 U	0.0875 UJ	0.07 U
		Perfluorooctanoic acid (PFOA)	NG/G	0.135 J	0.196 J	0.0625 UJ	0.0624 UJ	0.226 J	0.145 J	0.0499 U	0.0625 UJ	0.125 J
		Perfluorononanoic acid (PFNA)	NG/G	0.072 U	0.0719 U	0.09 UJ	0.0899 UJ	0.0719 U	0.0719 U	0.0719 U	0.09 UJ	0.072 U
		Perfluorodecanoic acid (PFDA)	NG/G	0.078 U	0.0778 U	0.0975 UJ	0.0974 UJ	0.0779 U	0.0779 U	0.0778 UJ	0.0975 UJ	0.078 U
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.06 U	0.0599 U	0.075 UJ	0.0749 UJ	0.0599 U	0.0599 U	0 R	0.075 UJ	0.06 U
		Perfluorododecanoic acid (PFDoA)	NG/G	0.048 U	0.0479 U	0.06 UJ	0.0599 UJ	0.048 U	0.048 U	0 R	0.06 UJ	0.048 U
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.078 U	0.0778 U	0.0975 UJ	0.0974 UJ	0.0779 U	0.0779 U	0 R	0.0975 UJ	0.078 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.062 U	0.0619 U	0.0775 UJ	0.0774 UJ	0.0619 U	0.0619 U	0 R	0.0775 UJ	0.062 U
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.068 U	0.0679 U	0.085 UJ	0.0849 UJ	0.0679 U	0.0679 U	0.0679 U	0.085 UJ	0.068 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.04 U	0.0399 U	0.05 UJ	0.0499 UJ	0.04 U	0.04 U	0.0399 U	0.05 UJ	0.04 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.06 U	0.0599 U	0.075 UJ	0.0749 UJ	0.0599 U	0.0599 U	0.0599 U	0.075 UJ	0.0663 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.07 U	0.0699 U	0.0875 UJ	0.0874 UJ	0.0699 U	0.0699 U	0.0699 UJ	0.0875 UJ	0.07 U
		Perfluorooctanesulfonic acid (PFOS)	NG/G	0.078 U	0.0778 U	0.0975 UJ	0.0974 UJ	0.0766 J	0.0849	0.0778 UJ	0.0975 UJ	0.517
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.079 U	0.0788 U	0.0988 UJ	0.0986 UJ	0.0789 U	0.0789 U	0.0788 UJ	0.0988 UJ	0.079 U
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.066 U	0.0659 U	0.0825 UJ	0.0824 UJ	0.0659 U	0.0659 U	0.0659 UJ	0.0825 UJ	0.066 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.038 U	0.0379 U	0.0475 UJ	0.0474 UJ	0.038 U	0.038 U	0.0379 UJ	0.0475 UJ	0.038 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	0.264 U	0.263 U	0.33 UJ	0.33 UJ	0.264 U	0.264 U	0.263 U	0.33 UJ	0.264 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	0.162 U	0.162 U	0.203 UJ	0.202 UJ	0.162 U	0.162 U	0.162 U	0.203 UJ	0.162 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.16 U	0.16 U	0.2 UJ	0.2 UJ	0.16 U	0.16 U	0.16 U	0.2 UJ	0.16 U
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.032 U	0.0319 U	0.04 UJ	0.04 UJ	0.032 U	0.032 U	0.0319 U	0.04 UJ	0.0299 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.02 UJ	0.02 UJ	0.025 UJ	0.025 UJ	0.02 UJ	0.02 UJ	0 R	0.025 UJ	0 R
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.068 UJ	0.0679 UJ	0.085 UJ	0.0849 UJ	0.0679 UJ	0 R	0 R	0.085 UJ	0 R
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.074 U	0.0739 U	0.0925 UJ	0.0924 UJ	0.0739 U	0.0739 U	0.0739 U	0.0925 UJ	0.074 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.076 U	0.0758 U	0.095 UJ	0.0949 UJ	0.0759 U	0.0759 U	0.0758 UJ	0.095 UJ	0.076 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	0.382 U	0.381 U	0.478 UJ	0.477 UJ	0.382 U	0.382 U	0 R	0.478 UJ	0.382 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	0.4 U	0.399 U	0.5 UJ	0.499 UJ	0 R	0.4 U	0 R	0.5 UJ	0.4 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.232 U	0.232 U	0.29 UJ	0.29 UJ	0.232 U	0.232 U	0.232 U	0.29 UJ	0.232 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.18 U	0.18 U	0.225 UJ	0.225 UJ	0.18 U	0.18 U	0.18 U	0.225 UJ	0.18 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.138 U	0.138 U	0.173 UJ	0.172 UJ	0.138 U	0.138 U	0.138 U	0.173 UJ	0.138 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.108 U	0.108 U	0.135 UJ	0.135 UJ	0.108 U	0.108 U	0.108 U	0.135 UJ	0.108 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.042 U	0.0419 U	0.0525 UJ	0.0524 UJ	0.042 U	0.042 U	0.0419 U	0.0525 UJ	0.042 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	0.25 U	0.25 U	0.313 UJ	0.312 UJ	0.25 U	0.25 U	0.25 U	0.313 UJ	0.25 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.238 U	0.238 U	0.298 UJ	0.297 UJ	0.238 U	0.238 U	0.238 U	0.298 UJ	0.238 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.07 U	0.0699 U	0.0875 UJ	0.0874 UJ	0.0699 U	0.0699 U	0.0699 U	0.0875 UJ	0.07 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.098 U	0.0978 U	0.123 UJ	0.122 UJ	0.0979 U	0.0979 U	0.0978 U	0.123 UJ	0.098 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	1.37 U	1.37 U	1.71 UJ	1.71 UJ	1.37 U	1.37 U	1.37 U	1.71 UJ	1.37 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	0.74 U	0.739 U	0.925 UJ	0.924 UJ	0.739 U	0.739 U	0.739 U	0.925 UJ	0.74 U

Prepared by: AKN
Date: 3/26/25
Checked by:
Date:

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Human Health Foraging Sampling Program - Stage 4 - Report 3
Former Loring Air Force Base, Limestone, Maine

			SDG	24-0773								
			Location	C13_CTR01		C14_CTR01		C15_LBT01		CS01_CTR01		
			Sample Date	9/10/2024		9/10/2024		9/11/2024		9/11/2024		
			Sample ID	F-BIOC13_CTR01_20240910		F-BIOC14_CTR01_20240910		F-BIOC15_LBT01_20240911		F-BIOCS01_CTR01_20240911		
			QC Code	N		N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/G	0.112	U	0.112	U	0.653		0.112	U	
		Perfluoropentanoic acid (PFPeA)	NG/G	0.108	U	0.108	U	0.135	UJ	0.12	J	
		Perfluorohexanoic acid (PFHxA)	NG/G	0.122	J+	0.0739	U	0.0925	UJ	0.0739	U	
		Perfluoroheptanoic acid (PFHpA)	NG/G	0.07	U	0.0699	U	0.0875	UJ	0.0699	U	
		Perfluorooctanoic acid (PFOA)	NG/G	0.222	J	0.18	J	0.0625	UJ	0.169	J	
		Perfluorononanoic acid (PFNA)	NG/G	0.072	U	0.0719	U	0.09	UJ	0.0719	U	
		Perfluorodecanoic acid (PFDA)	NG/G	0.043	J	0.0778	U	0.0975	UJ	0.0778	U	
		Perfluoroundecanoic acid (PFUnA)	NG/G	0.0511	J	0.06	J	0.075	UJ	0.0599	U	
		Perfluorododecanoic acid (PFDoA)	NG/G	0.0677	J	0.0479	U	0.06	UJ	0.0479	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/G	0.0404	J	0.0778	U	0.0975	UJ	0.0778	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/G	0.062	U	0.0619	U	0.0775	UJ	0.0619	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/G	0.068	U	0.0679	U	0.085	UJ	0.0679	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/G	0.04	U	0.0399	U	0.05	UJ	0.0399	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/G	0.593		0.0599	U	0.075	UJ	0.0599	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/G	0.07	U	0.0699	U	0.0875	UJ	0.0699	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/G	8.17		1.08		0.0975	UJ	0.0778	U	
		Perfluorononanesulfonic acid (PFNS)	NG/G	0.079	U	0.0788	U	0.0988	UJ	0.0788	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/G	0.0433	J	0.0659	U	0.0825	UJ	0.0659	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/G	0.038	U	0.0379	U	0.0475	UJ	0.0379	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/G	0.264	U	0.263	U	0.33	UJ	0.263	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/G	0.162	U	0.162	U	0.203	UJ	0.162	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/G	0.16	U	0.16	U	0.2	UJ	0.16	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/G	0.149		0.0319	U	0.04	UJ	0.0242	J	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/G	0.02	UJ	0.02	UJ	0.025	UJ	0.02	UJ	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/G	0.068	UJ	0.0679	UJ	0.085	UJ	0	R	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/G	0.074	U	0.0739	U	0.0925	UJ	0.0739	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/G	0.076	U	0.0758	U	0.095	UJ	0.0758	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/G	0.382	U	0.381	U	0.478	UJ	0.381	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/G	0.4	U	0.399	U	0.5	UJ	0.399	UJ	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/G	0.232	U	0.232	U	0.29	UJ	0.232	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/G	0.18	U	0.18	U	0.225	UJ	0.18	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/G	0.138	U	0.138	U	0.173	UJ	0.138	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/G	0.108	U	0.108	U	0.135	UJ	0.108	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/G	0.042	U	0.0419	U	0.0525	UJ	0.0419	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/G	0.25	U	0.25	U	0.313	UJ	0.25	U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/G	0.238	U	0.238	U	0.298	UJ	0.238	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/G	0.07	U	0.0699	U	0.0875	UJ	0.0699	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/G	0.098	U	0.0978	U	0.123	UJ	0.0978	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/G	1.37	U	1.37	U	1.71	UJ	1.37	U	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/G	0.74	U	0.739	U	0.925	UJ	0.739	U	

Prepared by: AKN
Date: 3/26/25
Checked by:
Date:

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0773	E1633DR	T	C7819-FS	F-BIOA12_CTR01_20240910	Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	UJ	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL	NG/G
			C7820-FS	F-BIOA12_CTR02_20240910	Perfluorooctanoic acid (PFOA)	0.196	I	0.196	J	EMPC	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00916	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	UJ	EISL, NISL	NG/G
			C7821-FS	F-BIOA13_LBT01_20240910	Perfluoropentanoic acid (PFPeA)	0.0665	U	0.0665	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.046	U	0.046	UJ	NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0438	U	0.0438	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0313	U	0.0313	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0443	U	0.0443	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0483	U	0.0483	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0375	U	0.0375	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0298	U	0.0298	UJ	EISL, NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0485	U	0.0485	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0388	U	0.0388	UJ	NISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.042	U	0.042	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0241	U	0.0241	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.037	U	0.037	UJ	NISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.043	U	0.043	UJ	NISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0478	U	0.0478	UJ	NISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0493	U	0.0493	UJ	NISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.041	U	0.041	UJ	NISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0231	U	0.0231	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.165	U	0.165	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.101	U	0.101	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0773	E1633DR	T	C7821-FS	F-BIOA13_LBT01_20240910	Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0995	U	0.0995	UJ	NISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0189	U	0.0189	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0115	U	0.0115	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0418	U	0.0418	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0458	U	0.0458	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0473	U	0.0473	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.239	U	0.239	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.25	U	0.25	UJ	NISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.144	U	0.144	UJ	NISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.112	U	0.112	UJ	NISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0855	U	0.0855	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0673	U	0.0673	UJ	NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0258	U	0.0258	UJ	NISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.156	U	0.156	UJ	NISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.148	U	0.148	UJ	NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0435	U	0.0435	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0603	U	0.0603	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.855	U	0.855	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.463	U	0.463	UJ	NISL	NG/G
			C7822-FS	F-BIOA14_LBT01_20240911	Perfluorobutanoic acid (PFBA)	0.156	J	0.156	J	TR	NG/G
					Perfluoropentanoic acid (PFPeA)	0.0664	U	0.0664	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.0459	U	0.0459	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0773	E1633DR	T	C7822-FS	F-BIOA14_LBT01_20240911	Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0437	U	0.0437	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0312	U	0.0312	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0442	U	0.0442	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0482	U	0.0482	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0375	U	0.0375	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0297	U	0.0297	UJ	EISL, NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0484	U	0.0484	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0387	U	0.0387	UJ	NISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.0419	U	0.0419	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0241	U	0.0241	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.037	U	0.037	UJ	NISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.0429	U	0.0429	UJ	NISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0477	U	0.0477	UJ	NISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0492	U	0.0492	UJ	NISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.0409	U	0.0409	UJ	NISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.023	U	0.023	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.164	U	0.164	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.101	U	0.101	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0994	U	0.0994	UJ	NISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0189	U	0.0189	UJ	EISL, NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0115	U	0.0115	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0417	U	0.0417	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0457	U	0.0457	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0472	U	0.0472	UJ	NISL	NG/G

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2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
24-0773	E1633DR	T	C7822-FS	F-BIOA14_LBT01_20240911	Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.238	U	0.238	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.25	U	0.25	UJ	NISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.144	U	0.144	UJ	NISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.112	U	0.112	UJ	NISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0854	U	0.0854	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0672	U	0.0672	UJ	NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0257	U	0.0257	UJ	NISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.155	U	0.155	UJ	NISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.148	U	0.148	UJ	NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0434	U	0.0434	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0602	U	0.0602	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.854	U	0.854	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.462	U	0.462	UJ	NISL	NG/G
			C7823-FS	F-BIOA15_CTR01_20240911	Perfluorooctanoic acid (PFOA)	0.226	I	0.226	J	EMPC	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0766	J	0.0766	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00917	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	U	0.2	R	EISL	NG/G
			C7824-FS	F-BIOA15_CTR02_20240911	Perfluoropentanoic acid (PFPeA)	0.0799	J	0.0799	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.145	I	0.145	J	EMPC	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00917	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	R	EISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
24-0773	E1633DR	T	C7825-FS	F-BIOB12_CTR01_20240910	Perfluorodecanoic acid (PFDA)	0.0385	U	0.0385	UJ	EISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0299	U	0.0299	R	EISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0238	U	0.0238	R	EISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0387	U	0.0387	R	EISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0309	U	0.0309	R	EISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.0343	U	0.0343	UJ	EISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0381	U	0.0381	UJ	EISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0393	U	0.0393	UJ	EISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.0327	U	0.0327	UJ	EISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0184	U	0.0184	UJ	EISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00916	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0377	U	0.0377	UJ	EISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.191	U	0.191	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	U	0.2	R	EISL	NG/G
			C7826-FS	F-BIOB13_LBT01_20240910	Perfluoropentanoic acid (PFPeA)	0.0665	U	0.0665	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.046	U	0.046	UJ	NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0438	U	0.0438	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0313	U	0.0313	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0443	U	0.0443	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0483	U	0.0483	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0375	U	0.0375	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0298	U	0.0298	UJ	NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0485	U	0.0485	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0388	U	0.0388	UJ	NISL	NG/G

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Former Loring Air Force Base, Limestone, Maine
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
24-0773	E1633DR	T	C7826-FS	F-BIOB13_LBT01_20240910	Perfluorobutanesulfonic acid (PFBS)	0.042	U	0.042	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0241	U	0.0241	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.037	U	0.037	UJ	NISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.043	U	0.043	UJ	NISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0478	U	0.0478	UJ	NISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0493	U	0.0493	UJ	NISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.041	U	0.041	UJ	NISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0231	U	0.0231	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.165	U	0.165	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.101	U	0.101	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0995	U	0.0995	UJ	NISL	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0189	U	0.0189	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0115	U	0.0115	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0418	U	0.0418	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0458	U	0.0458	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0473	U	0.0473	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.239	U	0.239	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.25	U	0.25	UJ	NISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.144	U	0.144	UJ	NISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.112	U	0.112	UJ	NISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0855	U	0.0855	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0673	U	0.0673	UJ	NISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0258	U	0.0258	UJ	NISL	NG/G
24-0773	E1633DR	T	C7826-FS	F-BIOB13_LBT01_20240910	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.156	U	0.156	UJ	NISL	NG/G
					11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.148	U	0.148	UJ	NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0435	U	0.0435	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0603	U	0.0603	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.855	U	0.855	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.463	U	0.463	UJ	NISL	NG/G
			C7827-FS	F-BIOC12_CTR01_20240910	Perfluoropentanoic acid (PFPeA)	0.0677	J	0.0677	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.125	I	0.125	J	EMPC	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.0663	J	0.0663	J	TR	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0299	J	0.0299	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	U	0.2	UJ	EISL, NISL	NG/G
			C7828-FS	F-BIOC13_CTR01_20240910	Perfluorohexanoic acid (PFHxA)	0.122		0.122	J+	LCH	NG/G
					Perfluorooctanoic acid (PFOA)	0.222	I	0.222	J	EMPC	NG/G
					Perfluorodecanoic acid (PFDA)	0.043	J	0.043	J	TR	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0511	J	0.0511	J	TR	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0677	J	0.0677	J	TR	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0404	J	0.0404	J	TR	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.0433	J	0.0433	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00918	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0334	U	0.0334	UJ	EISL, NISL	NG/G

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
24-0773	E1633DR	T	C7829-FS	F-BIOC14_CTR01_20240910	Perfluorooctanoic acid (PFOA)	0.18	I	0.18	J	EMPC	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.06	J	0.06	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00916	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	UJ	EISL, NISL	NG/G
			C7830-FS	F-BIOC15_LBT01_20240911	Perfluoropentanoic acid (PFPeA)	0.0665	U	0.0665	UJ	NISL	NG/G
					Perfluorohexanoic acid (PFHxA)	0.046	U	0.046	UJ	NISL	NG/G
					Perfluoroheptanoic acid (PFHpA)	0.0438	U	0.0438	UJ	NISL	NG/G
					Perfluorooctanoic acid (PFOA)	0.0313	U	0.0313	UJ	NISL	NG/G
					Perfluorononanoic acid (PFNA)	0.0443	U	0.0443	UJ	NISL	NG/G
					Perfluorodecanoic acid (PFDA)	0.0483	U	0.0483	UJ	NISL	NG/G
					Perfluoroundecanoic acid (PFUnA)	0.0375	U	0.0375	UJ	NISL	NG/G
					Perfluorododecanoic acid (PFDoA)	0.0298	U	0.0298	UJ	EISL, NISL	NG/G
					Perfluorotridecanoic acid (PFTrDA)	0.0485	U	0.0485	UJ	NISL	NG/G
					Perfluorotetradecanoic acid (PFTeDA)	0.0388	U	0.0388	UJ	NISL	NG/G
					Perfluorobutanesulfonic acid (PFBS)	0.042	U	0.042	UJ	NISL	NG/G
					Perfluoropentanesulfonic acid (PFPeS)	0.0241	U	0.0241	UJ	NISL	NG/G
					Perfluorohexanesulfonic acid (PFHxS)	0.037	U	0.037	UJ	NISL	NG/G
					Perfluoroheptanesulfonic acid (PFHpS)	0.043	U	0.043	UJ	NISL	NG/G
					Perfluorooctanesulfonic acid (PFOS)	0.0478	U	0.0478	UJ	NISL	NG/G
					Perfluorononanesulfonic acid (PFNS)	0.0493	U	0.0493	UJ	NISL	NG/G
					Perfluorodecanesulfonic acid (PFDS)	0.041	U	0.041	UJ	NISL	NG/G
					Perfluorododecanesulfonic acid (PFDoS)	0.0231	U	0.0231	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	0.165	U	0.165	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	0.101	U	0.101	UJ	NISL	NG/G
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	0.0995	U	0.0995	UJ	NISL	NG/G

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Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
Summer 2024 - SDG 24-0773

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
24-0773	E1633DR	T	C7830-FS	F-BIOC15_LBT01_20240911	Perfluorooctane sulfonamide (PFOSA)	0.0189	U	0.0189	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0115	U	0.0115	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0418	U	0.0418	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.0458	U	0.0458	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.0473	U	0.0473	UJ	NISL	NG/G
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	0.239	U	0.239	UJ	NISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.25	U	0.25	UJ	NISL	NG/G
					Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.144	U	0.144	UJ	NISL	NG/G
					4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.112	U	0.112	UJ	NISL	NG/G
					Perfluoro-3-methoxypropanoic acid (PFMPA)	0.0855	U	0.0855	UJ	NISL	NG/G
					Perfluoro-4-methoxybutanoic acid (PFMBA)	0.0673	U	0.0673	UJ	NISL	NG/G
					Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.0258	U	0.0258	UJ	NISL	NG/G
					9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.156	U	0.156	UJ	NISL	NG/G
					11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.148	U	0.148	UJ	NISL	NG/G
					Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.0435	U	0.0435	UJ	NISL	NG/G
					3-Perfluoropropyl propanoic acid (3:3FTCA)	0.0603	U	0.0603	UJ	NISL	NG/G
					2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.855	U	0.855	UJ	NISL	NG/G
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.463	U	0.463	UJ	NISL	NG/G

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS RI
2024 Human Health Foraging Sampling Program
Former Loring Air Force Base, Limestone, Maine
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					Perfluorooctanoic acid (PFOA)	0.135	I	0.135	J	EMPC	NG/G
24-0773	E1633DR	T	C7831-FS	F-BIOCS01_CTR01_20240911	Perfluoropentanoic acid (PFPeA)	0.12	J	0.12	J	TR	NG/G
					Perfluorooctanoic acid (PFOA)	0.169	I	0.169	J	EMPC	NG/G
					Perfluorooctane sulfonamide (PFOSA)	0.0242	J	0.0242	J	TR	NG/G
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0092	U	0.00916	UJ	EISL, NISL	NG/G
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0333	U	0.0333	R	EISL	NG/G
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	0.2	U	0.2	UJ	EISL, NISL	NG/G

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NJ = Analyte has been tentatively identified and concentration is estimated

EISL = Low extracted internal standard recovery

NG/G = nanograms per gram

TR = Analyte concentration is less than LOQ

NISL = Low non-extracted internal standard recovery

EMPC = Estimated maximun possible concentration

LCH = Laboratory control sample recovery greater than upper control limit

Prepared by:AKN
Date:1/2/25
Checked by: CR
Date: 1/6/2025

DATA VALIDATION REPORT

SPRING 2024 FORAGING EVENT GROUNDWATER AND SOIL
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

NOVEMBER 4, 2024

DATA VALIDATION REPORT

SPRING 2024 FORAGING EVENT GROUNDWATER AND SOIL
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

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November 4, 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
FTS	fluorotelomersulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
ng/L	nanograms per liter
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFDoS	perfluorododecanesulfonic acid
PFOA	perfluorooctanoic acid
PFOSA	perfluorooctanesulfonamide
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 15 aqueous samples, including one field duplicate and three equipment blanks, and 14 solid samples, including one field duplicate, between 8 and 23 May 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to SGS North America Inc. (SGS), located in Orlando, Florida, where they were received on 14 and 25 May 2024. SGS assigned the samples to job numbers FC15635 and FC15948 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 4 validation on a minimum of 10 percent (%) of the field samples reviewed in this report and Stage 2B validation on the remaining field sample data. The Stage 4 validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms and review of the raw analytical data and Stage 2B is the same as Stage 4 except it does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;

- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CVHL	High CCV recovery.
EBL	A target analyte was detected in the associated equipment blank at a concentrations less than the limit of quantitation (LOQ).
EISH	High EIS recovery.
IAG	Ion abundance ratio is outside of limits.
IVD	ICV recovery is outside of limits.
MSL	Low MS recovery. Result may be biased low.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by SGS may be considered usable with the limitations described in Sections 7.1.1 through 7.1.16.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries of target analytes were between 70 and 130%, with the following exceptions:

- N-Ethyl perfluorooctanesulfonamide (NEtFOSA) recovery was low at 67.3% in the mid-level ICV associated with the analysis of samples in SGS report FC15635. WSP UJ qualified the non-detected NEtFOSA results from samples F-GWA02_20240508, F-GWC04_20240508, F-GWPB01_20240510, F-HSA0200-01_20240508, F-HSC04_00-01_20240508, F-HSC05_00-10_20240508, and F-HSPB01_00-01_20240510 because of the low ICV recovery. (UJ, IVD)

- N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE) and N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) recoveries were high at 139% and 144%, respectively, in the mid-level ICV associated with samples F-GWA02-01_20240521, F-GWA02-02_20240521, F-GWC03_20240521, and F-SWSC01_20240523. Following the DoD data validation guidelines, WSP UJ qualified the NEtFOSE and NMeFOSE results from the associated samples because of the high ICV recoveries. (UJ, IVD)
- NMeFOSE and NEtFOSE recoveries were high at 151% and 156%, respectively, in the mid-level ICV associated with samples F-GWA07_20240522, F-GWB01_20240522, F-GWC09_20240523, and F-GWDUP01_20240522. Following DoD data validation guidelines, WSP UJ qualified the NEtFOSE and NMeFOSE results from the associated samples because of the high ICV recoveries. (UJ, IVD)

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical sequence, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Target analyte recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- N-Methyl perfluorooctanesulfonamide (NMeFOSA) recovery was high at 133% in a CCV associated with the analysis of samples F-GWA02-01_20240521, F-HSA02-01_00-01_20240521, F-HSB01_00-01_20240522, F-HSDUP01_00-01_20240522, F-HSB08_00-01_20240522, and F-SWSC01_20240523. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA results from the associated samples because of the high CCV recovery. (UJ, CVHL)
- NMeFOSA recovery was high at 144% in a CCV associated with the analysis of samples F-SWSC01_20240523, F-GWC03_20240521, and F-HSC03_00-01_20240521. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA results from the associated samples because of the high CCV recovery. (UJ, CVHL)

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid.

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks or equipment blanks associated with the sample reviewed in this report, with the following exceptions:

- NEtFOSA was detected in two instrument blanks associated with the water samples at concentrations of 0.0012 and 0.0011 nanograms per liter (ng/L). NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the instrument blank detections.
- NEtFOSA was detected in two instrument blanks associated with the soil sample analyses at concentrations of 0.12 and 0.10 milligrams per kilogram. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the instrument blank detections.
- Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonamide (PFOSA) were detected at concentrations of 0.47 and 1.7 ng/L, respectively, in equipment blank LORNG_EB016_05222024, associated with samples F-GWA02-01_20240521, F-GWA02-02_20240521, F-GWC03_20240521, F-GWC06_20240521, F-HSA02-01_00-01_20240521, F-HSA02-02_00-01_20240521, F-HSC03_00-01_20240521, and F-HSC06_00-01_20240521. Data limitations are summarized below.

- WSP U qualified the detected PFOA result from sample F-GWA02-01_20240521 at the detected concentration of 1.1 ng/L because the concentration detected in the sample was greater than the LOD but less than the LOQ. (U, EBL)
- WSP U qualified the PFOSA detections in samples F-GWA02-01_20240521 and F-GWC06_20240521 at their respective LODs of 1.9 ng/L and 2.0 ng/L because the concentrations detected in the samples were less than the LODs. (U, EBL)
- WSP J+ qualified the detected PFOSA result from sample F-GWC03_20240521 because the concentration detected in the sample was greater than both the LOQ and two times the concentration detected in the blank, and less than five times the concentration detected in the blank. (J+, EBL)
- WSP U qualified the PFOSA detection in samples F-HSC03_00-01_20240521 and F-HSC06_00-01_20240521 at their respective LODs of 0.00095 milligrams per kilogram (mg/kg) and 0.00077 mg/kg because the concentrations detected in the samples were less than the LOD. (U, EBL)
- The remaining associated PFOA and PFOSA results either were not detections, or the detected concentrations were greater than both the LOQ and five times the concentrations detected in the blank and data usability is not adversely affected by the blank detections.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ. The LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits, with the following exceptions.

- The NEtFOSA and NEtFOSE recovery values in the water LCS associated with analysis of samples F-GWA02-01_20240521, F-GWA02-02_20240521, F-GWA07_20240522, F-GWB01_20240522, F-GWDUP01_20240522, F-GWC03_20240521, F-GWC06_20240521, and F-GWC09_20240523 are above criteria at 165% and 151%, respectively. Neither NEtFOSA nor NEtFOSE were detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.
- The NEtFOSA recovery values in the water LLCS associated with analysis of samples F-GWA02-01_20240521, F-GWA02-02_20240521, F-GWA07_20240522, F-GWB01_20240522, F-GWDUP01_20240522, F-GWC03_20240521, F-GWC06_20240521, and F-GWC09_20240523 is above criteria at 159%. NEtFOSA was detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

SGS performed MS and/or MSD analyses on samples F-GWC09_20240523 and F-HSC09_00-01_20240523. Recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between MS and MSD results were less than 30%, with the following exceptions:

- The NEtFOSA and NEtFOSE MS and MSD recovery values are above criteria with values ranges from 151 to 182% in the spiked analyses of sample F-GWC09_20240523. Data qualifiers are not required because the bias is high and neither NEtFOSA nor NEtFOSE were detected in the unspiked sample.
- The perfluorododecanesulfonic acid (PFDoS) MS and MSD recovery values are below criteria at 34 and 35% in the spiked analyses of sample F-GWC09_20240523. WSP UJ qualified the undetected PFDoS result from sample F- GWC09_20240523 because of the low MS and MSD recoveries. (UJ, MSL)

7.1.11 LABORATORY DUPLICATE PRECISION

SGS performed MSD analyses on samples F-GWC09_20240523 and F-HSC09_00-01_20240523. Precision between duplicate analyses was acceptable, with RPDs less than 30% or differences between analyte concentrations less than the LOQ.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the QAPP-specified limits of 20 to 150%, with the following exceptions:

- Recovery values of the EISs $^{13}C_2$-4:2-fluorotelomersulfonic acid (FTS) and $^{13}C_2$-6:2-FTS were above criteria in the undiluted analyses of samples F-GWC04_20240508, F-GWA02_01_20240521, F-SWSC01_20240523, F-GWA07_20240522, F-GWB01_20240522, F-GWC09_202423, and F-GWDUP01_20240522 with values ranging from 153 to 355%. Data quality is not affected, and data qualifiers are not required because the recoveries are high and neither 4:2-FTS nor 6:2-FTS were detected in the affected samples.
- Recovery values of the EISs $^{13}C_2$-4:2-FTS, $^{13}C_2$-6:2-FTS, and $^{13}C_2$-8:2-FTS were above criteria for samples F-HSC04_00-01_20240508 and F-HSA07_20240522 with values ranging from 155 to 289%. Data quality is not affected, and data qualifiers are not required because the recoveries are high and 4:2-FTS, 6:2-FTS, and 8:2-FTS were detected in samples F-HSC04_00-01_20240508 or F-HSA07_20240522.
- Recovery values of the EISs $^{13}C_2$-4:2-FTS, $^{13}C_2$-6:2-FTS, and $^{13}C_2$-8:2-FTS were above criteria with values ranging from 153 to 298% in the undiluted analyses of sample F-GWC03_20240521. Data quality is not affected, and data qualifiers are not required because the recoveries are high and neither 4:2 FTS nor 6:2 FTS were detected in sample F-GWC03_20240521.
- The $^{13}C_2$-4:2-FTS recovery value is above criteria in the undiluted analyses of samples F-GWC06_20240521 at 239%. Data quality is not affected, and data qualifiers are not required because the recovery is high and 4:2-FTS was not detected in sample F-GWC06_20240521.
- Recoveries of the EIS d_3-MeFOSA and d_5-EtFOSA were below criteria at 17 and 13% in the original analysis of sample F-HSDUP01-00-01_20250522 and the $^{13}C_2$-4:2-FTS recovery is low at 19% in the reanalysis of sample F-HSDUP01_00-01_20250522. Data quality is not affected, and data qualifiers are not required because the analytes associated with the low EIS recoveries were reported from the analysis with acceptable EIS recovery.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.14 ION RATIOS

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV.

7.1.15 STAGE 4 VALIDATION

WSP perform Stage 4 validation on the samples in SGS laboratory report FC15635. The sample results were correctly calculated including mass or volume extracted, percent solids, and any dilution factors.

7.1.16 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS' J qualifiers. (J, TR)

Data from the aqueous field sample are reported in ng/L, while QC results are reported in micrograms per liter. Spiked concentrations are correct and WSP did not qualify any data based on the unit mismatch.

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples F-GWB01_20240522 and F-HSB01_00-01_20240522. RPD values between primary and field duplicate results were less than the QAPP-specified maximum of 30% or differences between primary and duplicate results were less than the LOQ, indicating acceptable sampling and analytical precision. Results from the primary samples and their field duplicate are presented in Table 4.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 1,040 data records from the field sample during this validation. Validated analytical results are presented in Table 2.

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- J: WSP J qualified 119 records (11%) because of detected concentrations less than the LOQ.
- J+: WSP J+ qualified 1 record (0.096%) because of a detection in an associated equipment blank.
- U: WSO U qualified 5 records (0.48%) because if detections in an associated equipment blank.
- UJ: WSP UJ qualified 32 records (1.1%) because of ICV or CCV recoveries outside of limits or low MS/MSD recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15635	A02	F-GWA02_20240508	FC15635-1	5/8/2024	WG	N	40
		F-HSA02_00-01_20240508	FC15635-4	5/8/2024	SO	N	40
	C04	F-GWC04_20240508	FC15635-2	5/8/2024	WG	N	40
		F-HSC04_00-01_20240508	FC15635-5	5/8/2024	SO	N	40
	C05	F-HSC05_00-01_20240508	FC15635-6	5/8/2024	SO	N	40
	PB01	F-GWPB01_20240510	FC15635-3	5/10/2024	WG	N	40
		F-HSPB01_00-01_20240510	FC15635-7	5/10/2024	SO	N	40
FC15948	A02-01	F-GWA02-01_20240521	FC15948-1	5/21/2024	WG	N	40
		F-HSA02-01_00-01_20240521	FC15948-5	5/21/2024	SO	N	40
	A02-02	F-GWA02-02_20240521	FC15948-2	5/21/2024	WG	N	40
		F-HSA02-02_00-01_20240521	FC15948-6	5/21/2024	SO	N	40
	A07	F-GWA07_20240522	FC15948-13	5/22/2024	WG	N	40
		F-HSA07_00-01_20240522	FC15948-17	5/22/2024	SO	N	40
	B01	F-GWB01_20240522	FC15948-14	5/22/2024	WG	N	40
		F-GWDUP01_20240522	FC15948-16	5/22/2024	WG	FD	40
		F-HSB01_00-01_20240522	FC15948-18	5/22/2024	SO	N	40
		F-HSDUP01_00-01_20240522	FC15948-21	5/22/2024	SO	FD	40
	B08	F-HSB08_00-01_20240522	FC15948-19	5/22/2024	SO	N	40
	C01	F-SWSC01_20240523	FC15948-10	5/23/2024	WS	N	40
	C03	F-GWC03_20240521	FC15948-3	5/21/2024	WG	N	40
		F-HSC03_00-01_20240521	FC15948-7	5/21/2024	SO	N	40
	C06	F-GWC06_20240521	FC15948-4	5/21/2024	WG	N	40
		F-HSC06_00-01_20240521	FC15948-8	5/21/2024	SO	N	40
	C09	F-GWC09_20240523	FC15948-15	5/23/2024	WG	N	40
		F-HSC09_00-01_20240523	FC15948-20	5/23/2024	SO	N	40
	CS01	F-SDCS01_00-01_20240523	FC15948-9	5/23/2024	SO	N	40
	FIELDQC	LORNG_EB016_05222024	FC15948-11	5/22/2024	WQ	EB	40
		LORNG_EB017_05222024	FC15948-12	5/22/2024	WQ	EB	40
		LORNG_EB018_05232024	FC15948-22	5/23/2024	WQ	EB	40

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

SO = Soil, WG = Groundwater, WQ = Water Quality Control

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:9/17/24
Checked by: MDS
Date: 9/18/2024

Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

		SDG		FC15635								FC15948			
		Location		A02	C04		PB01	A02-01		A02-02		A07	B01		
		Sample Date		5/8/2024	5/8/2024		5/10/2024	5/21/2024		5/21/2024		5/22/2024	5/22/2024		
		Sample ID		F-GWA02_20240508	F-GWC04_20240508		F-GWPB01_20240510	F-GWA02-01_20240521		F-GWA02-02_20240521		F-GWA07_20240522	F-GWB01_20240522		F-GWDUP01_20240522
		QC Code		N	N		N	N		N		N	N		FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Result	Qualifier	Result	Result	Qualifier	Result	Qualifier	Result	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6	6.2	J	4 U	9.9	J	33	U	9.5 J	6.3	J	6.8 J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.4	1.4	J	2 U	3.2	J	17	U	2.4 J	1.7	J	2 J
		Perfluorohexanoic acid (PFHxA)	NG/L	2 U	1.8	J	2 U	0.96	J	17	U	1.5 J	1.2	J	1.5 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.73	1.1	J	2 U	1.5	J	17	U	2.3 J	1.6	J	1.7 J
		Perfluorooctanoic acid (PFOA)	NG/L	0.92	2.2	J	0.81 J	1.1	U	8.3	U	3.2 J	2.2	J	2.5 J
		Perfluorononanoic acid (PFNA)	NG/L	0.87	0.69	J	2 U	0.86	J	17	U	1.6 J	0.63	J	0.76 J
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2	U	2 U	1.9	U	17	U	0.86 J	1.9	U	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4 U	4.1	U	4 U	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2 U	9.3		2 U	1.9	U	17	U	2.8 J	4.3		3.9
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.5 J	16.8		2 U	2.4	J	17	U	2.3 J	3.2	J	3.4 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4 U	4.1	U	4 U	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.1 U	8.2	U	8 U	38	U	67	U	38 U	38	U	39 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.1 U	8.2	U	8 U	7.5	U	67	U	7.5 U	7.7	U	7.8 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.1 U	8.2	U	8 U	7.5	U	67	U	7.5 U	7.7	U	7.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	0.72 J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4 U	4.1	U	4 U	3.8	UJ	33	U	3.8 U	3.8	U	3.9 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4 UJ	4.1	UJ	4 UJ	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4 U	4.1	U	4 U	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4 U	4.1	U	4 U	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20 U	20	U	20 U	19	UJ	170	UJ	19 UJ	19	UJ	20 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20 U	20	U	20 U	19	UJ	170	UJ	19 UJ	19	UJ	20 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4 U	4.1	U	4 U	3.8	U	33	U	3.8 U	3.8	U	3.9 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2	U	2 U	1.9	U	17	U	1.9 U	1.9	U	2 U

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Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

		SDG		FC15635						FC15948							
		Location		A02		C04		PB01		A02-01		A02-02		A07		B01	
		Sample Date		5/8/2024		5/8/2024		5/10/2024		5/21/2024		5/21/2024		5/22/2024		5/22/2024	
		Sample ID		F-GWA02_20240508		F-GWC04_20240508		F-GWPB01_20240510		F-GWA02-01_20240521		F-GWA02-02_20240521		F-GWA07_20240522		F-GWB01_20240522	F-GWDUP01_20240522
		QC Code		N		N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	4.1	U	4	U	3.8	U	33	U	3.8	U	3.8	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	4.1	U	4	U	3.8	U	33	U	3.8	U	3.8	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	4.1	U	4	U	3.8	U	33	U	3.8	U	3.8	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	4.1	U	4	U	3.8	U	33	U	3.8	U	3.8	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	2	U	1.9	U	17	U	1.9	U	1.9	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U	10	U	9.4	U	83	U	9.4	U	9.6	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	20	U	19	U	170	U	19	U	19	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	20	U	19	U	170	U	19	U	19	U	20	U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

			SDG							FC15948								
			Location	C01		C03		C06		C09		FIELDQC						
			Sample Date	5/23/2024		5/21/2024		5/21/2024		5/23/2024		5/22/2024				5/23/2024		
			Sample ID	F-SWSC01_20240523		F-GWC03_20240521		F-GWC06_20240521		F-GWC09_20240523		LORNG_EB016_05222024		LORNG_EB017_05222024		LORNG_EB018_05232024		
			QC Code	N		N		N		N		EB		EB		EB		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3	J	72.9		24.1		19.9		3.6	U	3.6	U	3.9	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.1	J	140		41.4		15.7		1.8	U	1.8	U	2	U	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	286		37.8		8.1		1.8	U	1.8	U	2	U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	71.3		27.4		11.9		1.8	U	1.8	U	2	U	
		Perfluorooctanoic acid (PFOA)	NG/L	1.5	J	172		39.7		15.6		0.47	J	0.91	U	0.98	U	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	18.3		5.1		4.9		1.8	U	1.8	U	2	U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	4.5		2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.48	J	35.5		5.4		0.8	J	1.8	U	1.8	U	2	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	48.2		7.6		3.8	U	3.6	U	3.6	U	3.9	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	2370		153		10.1		1.8	U	1.8	U	2	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	23.2		3.6	J	0.54	J	1.8	U	1.8	U	2	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.9	J	1110		124		35.1		1.8	U	1.8	U	2	U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	5.7		2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.8	U	3.9	U	3.8	UJ	3.6	U	3.6	U	3.9	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	75	U	39	U	75	U	7.3	U	7.3	U	7.8	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	75	U	7.8	U	75	U	7.3	U	7.3	U	7.8	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.5	U	7.8	U	7.5	U	7.3	U	7.3	U	7.8	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	4.5	J+	2	U	1.9	U	1.7	J	1.8	U	2	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	UJ	3.8	UJ	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ	19	UJ	20	U	19	UJ	18	U	18	U	20	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ	19	UJ	20	U	19	UJ	18	U	18	U	20	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U	

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Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

		SDG					FC15948								
		Location		C01		C03		C06		C09		FIELDQC			
		Sample Date		5/23/2024		5/21/2024		5/21/2024		5/23/2024		5/22/2024		5/23/2024	
		Sample ID		F-SWSC01_20240523		F-GWC03_20240521		F-GWC06_20240521		F-GWC09_20240523		LORNG_EB016_05222024		LORNG_EB017_05222024		LORNG_EB018_05232024	
		QC Code		N		N		N		N		EB		EB		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U	3.9	U	3.8	U	3.6	U	3.6	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	2	U	1.9	U	1.8	U	1.8	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.4	U	9.8	U	9.4	U	9.1	U	9.1	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	20	U	19	U	18	U	18	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	20	U	19	U	18	U	18	U	20	U

Notes:
N = Normal Field Sample
J = Concentration is estimated
J+ = Concentration is estimated; potential high bias
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/17/24
Checked by: MDS
Date: 9/18/2024

Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

			SDG	FC15635										FC15948						
			Location	A02		C04		C05		PB01		A02-01		A02-02		A07		B01		
			Sample Date	5/8/2024		5/8/2024		5/8/2024		5/10/2024		5/21/2024		5/21/2024		5/22/2024		5/22/2024		
			Sample ID	F-HSA02_00-01_20240508		F-HSC04_00-01_20240508		F-HSC05_00-01_20240508		F-HSPB01_00-01_20240510		F-HSA02-01_00-01_20240521		F-HSA02-02_00-01_20240521		F-HSA07_00-01_20240522		F-HSB01_00-01_20240522		F-HSDUP01_00-01_20240522	
			QC Code	N		N		N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.0024	U	0.0015	U	0.0011	U	0.0014	U	0.00098	U	0.0064	U	0.0056	U	0.0017	U	0.0018	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0024	J	0.00084	U	0.00088	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.0012	U	0.00076	U	0.00024	J	0.00068	U	0.00049	U	0.0032	U	0.0038	J	0.00084	U	0.00088	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.0012	U	0.00076	U	0.00016	J	0.00068	U	0.00049	U	0.0032	U	0.0017	J	0.00084	U	0.00088	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.0017	J	0.0027		0.0028		0.00068	U	0.00049	U	0.0023	J	0.0032	J	0.00062	J	0.00083	J
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.069	U	0.0021	U	0.0022	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.069	U	0.0021	U	0.0022	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.069	U	0.0021	U	0.0022	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	UJ	0.0032	U	0.0028	U	0.00084	UJ	0.0088	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.0012	UJ	0.00076	UJ	0.00054	UJ	0.00068	UJ	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.0088	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.006	U	0.0038	U	0.0027	U	0.0034	U	0.0024	U	0.016	U	0.014	U	0.0042	U	0.0044	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.006	U	0.0038	U	0.0027	U	0.0034	U	0.0024	U	0.016	U	0.014	U	0.0042	U	0.0044	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.0024	U	0.0015	U	0.0011	U	0.0014	U	0.00098	U	0.0064	U	0.0056	U	0.0017	U	0.0018	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.0024	U	0.0015	U	0.0011	U	0.0014	U	0.00098	U	0.0064	U	0.0056	U	0.0017	U	0.0018	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U

Prepared by: AKN
Date: 9/17/24
Checked by: MDS
Date: 9/18/2024

Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

			SDG	FC15635								FC15948							
			Location	A02		C04		C05		PB01		A02-01		A02-02		A07		B01	
			Sample Date	5/8/2024		5/8/2024		5/8/2024		5/10/2024		5/21/2024		5/21/2024		5/22/2024		5/22/2024	
			Sample ID	F-HSA02_00-01_20240508		F-HSC04_00-01_20240508		F-HSC05_00-01_20240508		F-HSPB01_00-01_20240510		F-HSA02-01_00-01_20240521		F-HSA02-02_00-01_20240521		F-HSA07_00-01_20240522		F-HSB01_00-01_20240522	F-HSDUP01_00-01_20240522
			QC Code	N		N		N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.0024	U	0.0015	U	0.0011	U	0.0014	U	0.00098	U	0.0064	U	0.0056	U	0.0017	U	0.0018	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.0069	U	0.0021	U	0.0022	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.0069	U	0.0021	U	0.0022	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.0012	U	0.00076	U	0.00054	U	0.00068	U	0.00049	U	0.0032	U	0.0028	U	0.00084	U	0.00088	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.003	U	0.0019	U	0.0014	U	0.0017	U	0.0012	U	0.008	U	0.0069	U	0.0021	U	0.0022	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.015	U	0.0095	U	0.0068	U	0.0085	U	0.0061	U	0.04	U	0.035	U	0.011	U	0.011	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.015	U	0.0095	U	0.0068	U	0.0085	U	0.0061	U	0.04	U	0.035	U	0.011	U	0.011	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
MG/KG = milligrams per kilograms.
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/17/24
Checked by: MDS
Date: 9/18/2024

Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

			SDG			FC15948					
			Location	B08		C03		C06	C09	CS01	
			Sample Date	5/22/2024		5/21/2024		5/21/2024	5/23/2024	5/23/2024	
			Sample ID	F-HSB08_00-01_20240522		F-HSC03_00-01_20240521		F-HSC06_00-01_20240521	F-HSC09_00-01_20240523	F-SDCS01_00-01_20240523	
			QC Code	N		N		N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	MG/KG	0.001	U	0.0009	J	0.0015 U	0.0013 U	0.0029	U
		Perfluoropentanoic acid (PFPeA)	MG/KG	0.00052	U	0.0016	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorohexanoic acid (PFHxA)	MG/KG	0.00052	U	0.0024		0.00077 U	0.00063 U	0.0014	U
		Perfluoroheptanoic acid (PFHpA)	MG/KG	0.00052	U	0.00092	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorooctanoic acid (PFOA)	MG/KG	0.00026	J	0.0025		0.00077 U	0.00063 U	0.0014	U
		Perfluorononanoic acid (PFNA)	MG/KG	0.00015	J	0.00049	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorodecanoic acid (PFDA)	MG/KG	0.00052	U	0.00067	J	0.00077 U	0.00063 U	0.0014	U
		Perfluoroundecanoic acid (PFUnA)	MG/KG	0.00052	U	0.00052	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorododecanoic acid (PFDoA)	MG/KG	0.00052	U	0.00044	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorotridecanoic acid (PFTrDA)	MG/KG	0.00052	U	0.00028	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorotetradecanoic acid (PFTeDA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		Perfluorobutanesulfonic acid (PFBS)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		Perfluoropentanesulfonic acid (PFPeS)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		Perfluorohexanesulfonic acid (PFHxS)	MG/KG	0.00027	J	0.015		0.00066 J	0.00063 U	0.0014	U
		Perfluoroheptanesulfonic acid (PFHpS)	MG/KG	0.00052	U	0.00042	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorooctanesulfonic acid (PFOS)	MG/KG	0.00036	J	0.0981		0.0088	0.0039	0.0014	U
		Perfluorononanesulfonic acid (PFNS)	MG/KG	0.00052	U	0.0012	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorodecanesulfonic acid (PFDS)	MG/KG	0.00052	U	0.00066	J	0.00077 U	0.00063 U	0.0014	U
		Perfluorododecanesulfonic acid (PFDoS)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	MG/KG	0.0013	U	0.0024	U	0.0019 U	0.0016 U	0.0036	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	MG/KG	0.0013	U	0.0024	U	0.0019 U	0.0016 U	0.0036	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	MG/KG	0.0013	U	0.0024	U	0.0019 U	0.0016 U	0.0036	U
		Perfluorooctane sulfonamide (PFOSA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	MG/KG	0.00052	UJ	0.00095	UJ	0.00077 U	0.00063 U	0.0014	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	MG/KG	0.0026	U	0.0047	U	0.0038 U	0.0031 U	0.0072	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	MG/KG	0.0026	U	0.0047	U	0.0038 U	0.0031 U	0.0072	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	MG/KG	0.001	U	0.0019	U	0.0015 U	0.0013 U	0.0029	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	MG/KG	0.001	U	0.0019	U	0.0015 U	0.0013 U	0.0029	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	MG/KG	0.00052	U	0.00095	U	0.00077 U	0.00063 U	0.0014	U

Prepared by: AKN
Date: 9/17/24
Checked by: MDS
Date: 9/18/2024

Table 2 - Summary of Analytical Results
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

			SDG			FC15948					
			Location	B08		C03		C06	C09	CS01	
			Sample Date	5/22/2024		5/21/2024		5/21/2024	5/23/2024	5/23/2024	
			Sample ID	F-HSB08_00-01_20240522		F-HSC03_00-01_20240521		F-HSC06_00-01_20240521	F-HSC09_00-01_20240523	F-SDCS01_00-01_20240523	
			QC Code	N		N		N	N	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	MG/KG	0.00052	U	0.00095	U	0.00077	U	0.00063	U	0.0014	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	MG/KG	0.001	U	0.0019	U	0.0015	U	0.0013	U	0.0029	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	MG/KG	0.0013	U	0.0024	U	0.0019	U	0.0016	U	0.0036	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	MG/KG	0.0013	U	0.0024	U	0.0019	U	0.0016	U	0.0036	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	MG/KG	0.00052	U	0.00095	U	0.00077	U	0.00063	U	0.0014	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	MG/KG	0.0013	U	0.0024	U	0.0019	U	0.0016	U	0.0036	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	MG/KG	0.0065	U	0.012	U	0.0096	U	0.0078	U	0.018	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	MG/KG	0.0065	U	0.012	U	0.0096	U	0.0078	U	0.018	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
MG/KG = milligrams per kilograms.
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/17/24
Checked by: MDS
Date: 9/18/2024

Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15635	E1633DR	T	FC15635-1	F-GWA02_20240508	Perfluorobutanoic acid (PFBA)	6	J	6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.73	J	0.73	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.92	J	0.92	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.87	J	0.87	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.5	J	2.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15635-2	F-GWC04_20240508	Perfluorobutanoic acid (PFBA)	6.2	J	6.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.69	J	0.69	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.1	U	4.1	UJ	IVD	NG/L
			FC15635-3	F-GWPB01_20240510	Perfluorooctanoic acid (PFOA)	0.81	J	0.81	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15635-4	F-HSA02_00-01_20240508	Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.0017	J	TR	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0012	U	0.0012	UJ	IVD	MG/KG
			FC15635-5	F-HSC04_00-01_20240508	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0008	U	0.00076	UJ	IVD	MG/KG
			FC15635-6	F-HSC05_00-01_20240508	Perfluorooctanoic acid (PFOA)	0.0002	J	0.00024	J	TR	MG/KG
					Perfluorononanoic acid (PFNA)	0.0002	J	0.00016	J	TR	MG/KG
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0005	U	0.00054	UJ	IVD	MG/KG
			FC15635-7	F-HSPB01_00-01_20240510	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.0007	U	0.00068	UJ	IVD	MG/KG

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Date:9/17/24
Checked by: MDS
Date: 9/18/2024

Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948	E1633DR	T	FC15948-1	F-GWA02-01_20240521	Perfluorobutanoic acid (PFBA)	9.9	J	9.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.2	J	3.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.96	J	0.96	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	U	EBL	NG/L
					Perfluorononanoic acid (PFNA)	0.86	J	0.86	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	J	1.9	U	EBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15948-2	F-GWA02-02_20240521	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	170	U	170	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	170	U	170	UJ	IVD	NG/L
			FC15948-13	F-GWA07_20240522	Perfluorobutanoic acid (PFBA)	9.5	J	9.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.4	J	2.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.2	J	3.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.86	J	0.86	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.8	J	2.8	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.3	J	2.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

Prepared by:AKN
Date:9/17/24
Checked by: MDS
Date: 9/18/2024

Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948	E1633DR	T	FC15948-14	F-GWB01_20240522	Perfluorobutanoic acid (PFBA)	6.3	J	6.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.63	J	0.63	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.2	J	3.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15948-3	F-GWC03_20240521	Perfluorooctane sulfonamide (PFOSA)	4.5	=	4.5	J+	EBL	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15948-4	F-GWC06_20240521	Perfluoroheptanesulfonic acid (PFHpS)	3.6	J	3.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	J	2	U	EBL	NG/L
			FC15948-15	F-GWC09_20240523	Perfluorobutanesulfonic acid (PFBS)	0.8	J	0.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.54	J	0.54	J	TR	NG/L
					Perfluorododecanesulfonic acid (PFDoS)	3.8	U	3.8	UJ	MSL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948	E1633DR	T	FC15948-16	F-GWDUP01_20240522	Perfluorobutanoic acid (PFBA)	6.8	J	6.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2	J	2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.7	J	1.7	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.5	J	2.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.76	J	0.76	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.4	J	3.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.72	J	0.72	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15948-5	F-HSA02-01_00-01_20240521	N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0005	U	0.00049	UJ	CVHL	MG/KG
			FC15948-6	F-HSA02-02_00-01_20240521	Perfluorooctanesulfonic acid (PFOS)	0.0023	J	0.0023	J	TR	MG/KG
			FC15948-17	F-HSA07_00-01_20240522	Perfluoroheptanoic acid (PFHpA)	0.0024	J	0.0024	J	TR	MG/KG
					Perfluorooctanoic acid (PFOA)	0.0038	J	0.0038	J	TR	MG/KG
					Perfluorononanoic acid (PFNA)	0.0017	J	0.0017	J	TR	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0032	J	0.0032	J	TR	MG/KG
			FC15948-18	F-HSB01_00-01_20240522	Perfluorooctanesulfonic acid (PFOS)	0.0006	J	0.00062	J	TR	MG/KG
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0008	U	0.00084	UJ	CVHL	MG/KG
			FC15948-19	F-HSB08_00-01_20240522	Perfluorooctanoic acid (PFOA)	0.0003	J	0.00026	J	TR	MG/KG
					Perfluorononanoic acid (PFNA)	0.0002	J	0.00015	J	TR	MG/KG
					Perfluorohexanesulfonic acid (PFHxS)	0.0003	J	0.00027	J	TR	MG/KG
					Perfluorooctanesulfonic acid (PFOS)	0.0004	J	0.00036	J	TR	MG/KG
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0005	U	0.00052	UJ	CVHL	MG/KG

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Checked by: MDS
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Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948	E1633DR	T	FC15948-7	F-HSC03_00-01_20240521	Perfluorobutanoic acid (PFBA)	0.0009	J	0.0009	J	TR	MG/KG
					Perfluoropentanoic acid (PFPeA)	0.0016	J	0.0016	J	TR	MG/KG
					Perfluoroheptanoic acid (PFHpA)	0.0009	J	0.00092	J	TR	MG/KG
					Perfluorononanoic acid (PFNA)	0.0005	J	0.00049	J	TR	MG/KG
					Perfluorodecanoic acid (PFDA)	0.0007	J	0.00067	J	TR	MG/KG
					Perfluoroundecanoic acid (PFUnA)	0.0005	J	0.00052	J	TR	MG/KG
					Perfluorododecanoic acid (PFDoA)	0.0004	J	0.00044	J	TR	MG/KG
					Perfluorotridecanoic acid (PFTrDA)	0.0003	J	0.00028	J	TR	MG/KG
					Perfluoroheptanesulfonic acid (PFHpS)	0.0004	J	0.00042	J	TR	MG/KG
					Perfluorononanesulfonic acid (PFNS)	0.0012	J	0.0012	J	TR	MG/KG
					Perfluorodecanesulfonic acid (PFDS)	0.0007	J	0.00066	J	TR	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.001	J	0.00095	U	EBL	MG/KG
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.001	U	0.00095	UJ	CVHL	MG/KG
			FC15948-8	F-HSC06_00-01_20240521	Perfluorohexanesulfonic acid (PFHxS)	0.0007	J	0.00066	J	TR	MG/KG
					Perfluorooctane sulfonamide (PFOSA)	0.0008	J	0.00077	U	EBL	MG/KG
			FC15948-21	F-HSDUP01_00-01_20240522	Perfluorooctanesulfonic acid (PFOS)	0.0008	J	0.00083	J	TR	MG/KG
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.0088	U	0.0088	UJ	CVHL	MG/KG
			FC15948-10	F-SWSC01_20240523	Perfluorobutanoic acid (PFBA)	3	J	3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.48	J	0.48	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

Prepared by:AKN
Date:9/17/24
Checked by: MDS
Date: 9/18/2024

Table 3 - Data Qualification Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J+ = Analyte is estimated; potential high bias

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

CVHL = High CCV recovery.

EBL = Analyte detected in equipment blank; concentration in sample is less than LOQ

MSL = MS/MSD recovery less than the lower control limit

IVD = ICV recovery is outside of limits.

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:9/17/24
Checked by: MDS
Date: 9/18/2024

Table 4 - Field Duplicate Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15948	F-GWB01_20240522	F-GWDUP01_20240522	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	6.3	J	6.8	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.7	J	2	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.2	J	1.5	J	NC	TR
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.6	J	1.7	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	2.2	J	2.5	J	NC	TR
				Perfluorononanoic acid (PFNA) (NG/L)	0.63	J	0.76	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.8	U	3.9	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	4.3		3.9		10	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3.2	J	3.4	J	NC	TR
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.9	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	38	U	39	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.7	U	7.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.7	U	7.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	0.72	J	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.9	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.9	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.9	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.9	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.9	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.9	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.9	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	9.8	U	NC	

Prepared by: AKN 9/17/24
Checked by: MDS 9/18/2024

Table 4 - Field Duplicate Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	20	U	NC	
FC15948	F-HSB01_00-01_20240522	F-HSDUP01_00-01_20240522	PFAS	Perfluorobutanoic acid (PFBA) (MG/KG)	0.0017	U	0.0018	U	NC	
				Perfluoropentanoic acid (PFPeA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorohexanoic acid (PFHxA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluoroheptanoic acid (PFHpA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorooctanoic acid (PFOA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorononanoic acid (PFNA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorodecanoic acid (PFDA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluoroundecanoic acid (PFUnA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorododecanoic acid (PFDoA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (MG/KG)	0.00062	J	0.00083	J	NC	TR
				Perfluorononanesulfonic acid (PFNS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (MG/KG)	0.00084	U	0.00088	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (MG/KG)	0.0021	U	0.0022	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (MG/KG)	0.0021	U	0.0022	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (MG/KG)	0.0021	U	0.0022	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (MG/KG)	0.00084	U	0.00088	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (MG/KG)	0.00084	UJ	0.0088	UJ	NC	CVHL
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (MG/KG)	0.00084	U	0.0088	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (MG/KG)	0.00084	U	0.00088	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (MG/KG)	0.00084	U	0.00088	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (MG/KG)	0.0042	U	0.0044	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (MG/KG)	0.0042	U	0.0044	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (MG/KG)	0.0017	U	0.0018	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (MG/KG)	0.0017	U	0.0018	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (MG/KG)	0.00084	U	0.00088	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (MG/KG)	0.0017	U	0.0018	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (MG/KG)	0.0021	U	0.0022	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (MG/KG)	0.0021	U	0.0022	U	NC	

Prepared by: AKN 9/17/24
Checked by: MDS 9/18/2024

Table 4 - Field Duplicate Summary
Data Validation Report
Spring 2024 Foraging Event - Groundwater and Soil
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
SDGs FC15635 and FC15948

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (MG/KG)	0.00084	U	0.00088	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (MG/KG)	0.0021	U	0.0022	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (MG/KG)	0.011	U	0.011	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (MG/KG)	0.011	U	0.011	U	NC	

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

NC = not calculated.

CVHL = High CCV recovery.

IVD = ICV recovery is outside of limits.

RPD = relative percent difference between parent sample and field duplicate.

TR = Analyte concentration is less than LOQ

Prepared by: AKN 9/17/24
Checked by: MDS 9/18/2024

DATA VALIDATION REPORT

MAY AND JUNE 2024 GROUNDWATER
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

OCTOBER 31, 2024

DATA VALIDATION REPORT

MAY AND JUNE 2024 GROUNDWATER
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

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October 31, 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
%	percent
7:3 FTCA	3-perfluoroheptyl propanoic acid
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
ADONA	4,8-dioxa-3H-perfluorononanoic acid
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
HFPO-DA	hexafluoropropylene oxide dimer acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	N-ethyl perfluorooctanesulfonamide
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethyl perfluorooctanesulfonamidoethanol
ng/L	nanograms per liter
NIS	non-extracted internal standard
NMeFOSA	N-methyl perfluorooctanesulfonamide
NMeFOSE	N-methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFDA	perfluorodecanoic acid
PFDS	perfluorodecanesulfonic acid
PFPeS	perfluoropentanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide

PFNS	perfluorononanesulfonic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 109 aqueous samples, including 8 field duplicates and 11 equipment blanks, between 10 May and 25 June 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the sample to SGS North America Inc. (SGS), located in Orlando, Florida, where they were received on 17 May, 14 June, and 28 June 2024. SGS assigned the samples to job numbers FC15756, FC16453, and FC16855 and analyzed them for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633. WSP also submitted three samples to Bureau Veritas Canada, located in Mississauga, Ontario, Canada. The samples were received by the laboratory on 17 May 2024, assigned to job number C4E8929, and analyzed for PFAS using EPA Draft Method 1633.

The field sample identifications (IDs), sample collection dates, and laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 2B validation on 100 percent (%) of SGS' data for the samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms. Stage 2B validation does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), instrument sensitivity check (ISC), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ICS;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by PFAS recovery in laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;

- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MS/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

3.5 INTERLABORATORY SPLIT SAMPLES

Interlaboratory split samples are co-located samples that are sent to both the primary laboratory and to a secondary laboratory to confirm analytical precision between the two laboratories' results and comparability of results produced by the primary laboratory. Data from the split laboratory were not validated and no data are qualified based on interlaboratory split results. Results from the primary and split analyses are provided for comparative purposes only.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CVHL	High CCV recovery.
EISH	High EIS recovery.
IAG	Ion abundance ratio is outside of limits.
IVD	ICV recovery is outside of limits.
MSL	Low MS recovery. Result may be biased low.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at average temperatures less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report are considered usable with the limitations and exceptions described in Sections 7.1 through 8.0. Final validated results are summarized on Table 2. Results qualified during validation are summarized on Table 3 with applicable reason codes.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

Mass calibration verifications were performed before the ICALs associated with the analysis of the samples reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%, with the following exceptions:

SDG FC15756

- N-Ethyl perfluorooctanesulfonamide (NEtFOSA) recovery was low at 67.3% in the mid-level ICV associated with the analysis of samples LORNG_JBW7347B_05132024, LORNG_JBW7347B_05132024FD,

LORNG_JBW8009_05102024, and LORNG_JMW3501_05132024. WSP UJ qualified the non-detected NEtFOSA results from the associated samples because if the low ICV recovery. (UJ, IVD)

- NEtFOSA recovery was low at 60% in the mid-level ICV associated with the analysis of samples LORNG_BW05008_05142024, LORNG_BW05011D_05142024, LORNG_BW05011S_05152024, LORNG_BW10007_05152024, LORNG_EBGB_BW002_05132024, LORNG_GC_BW002D_05152024, LORNG_JBW7203B_05102024, LORNG_JBW7326A_05142024, LORNG_JBW7326B_05142024, LORNG_JBW7345B_05152024, LORNG_JBW7614_05152024, LORNG_JMW-0416B_05132024, LORNG_JMW-0505_05132024, LORNG_JMW-0602_05152024, LORNG_JMW-0602_05152024FD, LORNG_JMW-0603_05142024, LORNG_JMW0682_05152024, LORNG_JMW-0806_05142024, LORNG_JMW0982_05132024, LORNG_JMW0982_05132024FD, LORNG_JMW1762_05152024, LORNG_JMW3601_05152024, LORNG_JMW6001_05142024, LORNG_JMW6001_05142024FD, LORNG_LF2MW2_05152024, LORNG_MMW0009_05132024, LORNG_MMW0132_05142024, LORNG_MMW0422_05132024, LORNG_NP_OW001_05152024, LORNG_OW02002_05142024, LORNG_OW10007_05152024, LORNG_OW20001_05102024, LORNG_OW20003_05152024, LORNG_OW20004_05102024, LORNG_OW20004_05102024FD, LORNG_OW20005_05102024, LORNG_OW24001_05152024, LORNG_UNK-036_05142024, LORNG_USMW013_05142024, and LORNG_USMW019_05152024. WSP UJ qualified the non-detected NEtFOSA results from the associated samples because of the low ICV recovery. (UJ, IVD)

SDG FC16855

- N-Methyl perfluorooctanesulfonamide (NMeFOSA) recovery was high at 132% in the mid-level ICV associated with the analysis of samples LORNG_LYS01007D_06192024 (1:10 dilution) and LORNG_USMW012_06182024. Data limitations are summarized below.
  - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA result from sample LORNG_USMW012_06182024 because of the high ICV recovery. (UJ, IVD)
  - NMeFOSA was not reported from the 1:10 dilution analysis of sample LORNG_LYS01007D_06192024 and WSP did not qualify the NMeFOSA result due to the high ICV recovery.
- NEtFOSA recovery was low at 61% in the mid-level ICV associated with the analysis of the 1:10 dilution of sample LORNG_GC_BW002D_05152024. NEtFOSA was not reported from the associated analysis and data usability is not adversely affected by the low ICV recovery.
- N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE) and N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) recoveries were high at 144% and 139%, respectively, in the mid-level ICV associated with the analysis of equipment blank LORNG_EB014_05152024. Equipment blanks were not qualified based on the high ICV recoveries.
- NMeFOSA (132%), NMeFOSE (152%), and NEtFOSE (161%) recoveries were high in the mid-level ICV associated with the analysis of equipment blanks LORNG_EB009_05142024 and LORNG_EB011_05142024 and the confirmation analysis of sample LORNG_EBGB_BW002_05132024. Equipment blanks resuls were not qualified based on the high ICV recoveries.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

ISCs were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) recovery was high at 135% in a CCV associated with the analysis of sample LORNG_JMW3501_05132024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSAA result from the associated sample because of the high CCV recovery. (UJ, CVHL)
- 3-Perfluoroheptyl propanoic acid (7:3 FTCA) recovery was high at 132% in a CCV associated with the 1:10 dilution analyses of samples LORNG_LYS07007D_06192024, LORNG_LYS07007DDUP_06192024, and LORNG_MMW8015_06182024. 7:3 FTCA was not reported from the associated analyses and data usability is not adversely affected by the high CCV recovery.

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks associated with the sample reviewed in this report, with the following exceptions:

- Perfluorooctanoic acid (PFOA) was detected at a concentration of 1.1 nanograms per liter (ng/L) in equipment blank LORNG_EB009_05142024, associated with sample LORNG_BW05011D_05142024. Target analytes were not detected in sample LORNG_BW05011D_05142024 and data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 2.4 ng/L in equipment blank LORNG_EB011_05142024, associated with samples LORNG_JMW-0806_05142024 and LORNG_OW02002_05142024. The PFOS concentrations detected in the associated samples were greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 0.83 ng/L in equipment blank LORNG_EB025_06122024, associated with sample LORNG_JMW0301C_06122024. The PFOS concentration detected in the associated sample was greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at concentrations of 0.0010 micrograms per liter (µg/L) in the instrument blank associated with the re-extraction analysis of sample LORNG_BW06006_06112024HS. NEtFOSA was not reported from the associated analysis and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at concentrations of 0.0011 µg/L in the instrument blank analyzed immediately after the ICAL and before the ICV, but not directly associated with any project samples. Based on professional judgement, WSP did not qualify any data based on the blank detection.
- NEtFOSA was detected at a concentration of 0.0012 µg/L in the instrument blank associated with the analysis of sample LORNG_OW20004_05102024. NEtFOSA was not detected in the associated sample and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at a concentration of 0.0013 µg/L in instrument blanks associated with the analysis of samples LORNG_AA07MW-01_06112024, LORNG_BW05007_06102024, LORNG_BW07003_06112024, LORNG_JBW7345B_05152024, LORNG_JBW7614_05152024, LORNG_JMW-0602_05152024FD, LORNG_JMW0682_05152024, LORNG_JMW3601_05152024, LORNG_LF2MW2_05152024, LORNG_OW01004_06102024, LORNG_OW07003_06112024, LORNG_OW20001_05102024, LORNG_OW20003_05152024, LORNG_OW24001_05152024, LORNG_RFW1145_35_06112024, LORNG_RFW1145_75_06112024, and LORNG_USMW019_05152024. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at a concentration of 0.0014 µg/L in an instrument blank associated with the analysis of samples LORNG_AA07MW-01_06112024 (1:10 dilution), LORNG_BW01007_06102024,

LORNG_BW07003_06112024 (1:10 dilution), LORNG_OW01004_06102024 (1:5 dilution), LORNG_OW07003_06112024 (1:10 dilution), LORNG_RFW1145_35_06112024 (1:10 dilution), and LORNG_RFW1145_75_06112024 (1:5 dilution). NEtFOSA either was not reported from the associated analyses or was not detected in the associated sample. Data usability is not adversely affected by the blank detection.

- NEtFOSA was detected at a concentration of 0.0017 µg/L in an equipment blank associated with the analysis of samples LORNG_AA07MW-02_06252024 (1:5 dilution), LORNG_AA07MW-02_06252024FD (1:5 dilution), LORNG_BW06006_06132024 (1:2 dilution), LORNG_JBW8003B_06182024 (1:5 dilution), LORNG_LYS01007S_06192024 (1:10 dilution), LORNG_LYS05012D_06192024 (1:10 dilution), LORNG_LYS07007D_06192024 (1:10 dilution), LORNG_LYS07007DDUP_06192024 (1:10 dilution), LORNG_LYS07007S_06192024 (1:10 dilution), LORNG_LYS07007SDUP_06192024 (1:10 dilution), LORNG_MMW8015_06182024 (1:10 dilution), LORNG_OW01002_06142024 (1:2 dilution), LORNG_SB/OW12001_06142024 (1:5 dilution), and LORNG_USMW021_06142024. NEtFOSA either was not reported from the associated analyses or was not detected in the associated samples and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at a concentration of 0.0018 µg/L in an instrument blank associated with the analysis of samples LORNG_LYS01007D_06192024 (1:10 dilution) and LORNG_USMW012_06182024. NEtFOSA either was not reported from the associated analysis or was not detected in the associated sample and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at a concentration of 0.0021 µg/L in an instrument blank associated with the analysis of samples LORNG_AA07MW-02_06252024, LORNG_AA07MW-02_06252024FD, LORNG_BSMW3S_06182024, LORNG_BW06006_06132024, LORNG_FMW3410_06132024, LORNG_JBW7338B_06212024, LORNG_JBW7339A_06132024, LORNG_JBW7339B_06132024, LORNG_JBW8003B_06182024, LORNG_JEBS-4_06212024, LORNG_JMW0010_06132024, LORNG_JMW2680_06122024, LORNG_JPZ7601_06132024, LORNG_JPZ7602_06132024, LORNG_LORNG-UNK-026_06122024, LORNG_LYS01007D_06192024, LORNG_LYS07007DDUP_06192024, LORNG_LYS01007S_06192024, LORNG_LYS05012D_06192024, LORNG_LYS05012S_06192024, LORNG_LYS07007D_06192024, LORNG_LYS07007S_06192024, LORNG_LYS07007SDUP_06192024, LORNG_MMW0531_06132024, LORNG_MMW8015_06182024, LORNG_OW01002_06142024, LORNG_OW07001_06242024, and LORNG_SB/OW12001_06142024. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the blank detection.
- NEtFOSA was detected at a concentration of 0.0027 µg/L in an instrument blank associated with the analysis of samples LORNG_LYS07007D_06192024 (undiluted and 1:10 dilution), LORNG_LYS07007DDUP_06192024 (1:10 dilution), and LORNG_OW07001_06242024. NEtFOSA either was not reported from the associated analyses or was not detected in the associated samples and data usability is not adversely affected by the blank detection.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

SGS performed MS and/or MSD analyses on samples LORNG_BW01007_06102024, LORNG_BW05008_05142024, LORNG_BSMW3S_06182024, LORNG_JBW7203B_05102024, LORNG_JBW7347B_05132024, LORNG_JBW8003B_06182024, LORNG_JMW8011_06112024, and LORNG_OW20004_05102024FD. Recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between MS and MSD results were less than 30%, with the following exceptions:

- Perfluorohexanoic acid (PFHxA [235%, 162%]), PFOA (317%, MS), perfluoropentanesulfonic acid (PFPeS [10%, -11%]), PFHxS (-631%, -1,326%), and PFOS (-1,154%, -1,001%) recoveries were outside of limits in the MS and/or MSD performed on sample LORNG_JMW8011_06112024. Additionally, the RPD between MS and MSD results for NEtFOSAA was high at 32%. Data limitations are summarized below.

- The PFPeS result from sample LORNG_JMW8011_06112024 was qualified J- because of the low MS recoveries with reason code MSL.
- The PFHxA (0.392 µg/L), PFOA (0.318 µg/L), PFHxS (2.04 µg/L), and PFOS (2.26 µg/L) concentrations detected in the unspiked native sample were more than three times the spike concentrations of 0.0225 µg/L to 0.0248 µg/L and it is not possible to assess data usability for these analytes in this sample based on the MS recoveries.
- NEtFOSAA was not detected in the unspiked native sample and data usability is not adversely affected by the potential analytical imprecision.

– PFHxA (38%, MSD), PFOA (170%, MSD), perfluorohexanesulfonic acid (PFHxS [380%, 306%]), and PFOS (594%, 352%) recoveries were outside of limits in the MS and/or MSD performed on sample LORNG_JBW8003B_06182024. Additionally, RPDs between MS and MSD results were high for 4:2 FTS and NEtFOSAA at 38% and 54%, respectively. Data limitations are summarized below.

- PFHxA (0.158 µg/L), PFOA (0.143 µg/L), PFHxS (0.750 µg/L), and PFOS (0.900 µg/L) concentrations detected in the unspiked native sample were greater than three times the spike concentrations of 0.00216 µg/L to 0.00236 µg/L and it is not possible to assess data usability for these analytes in this sample based on the MS recoveries.
- 4:2 FTS and NEtFOSAA were not detected in the unspiked native sample and data usability is not adversely affected by the potential analytical imprecision.

– PFHxS and PFOS recoveries were outside of limits at 214% and -4%, respectively, in the MS performed on sample LORNG_BW01007_06102024. The PFHxS and PFOS concentrations detected in the unspiked native sample, at 0.465 µg/L and 0.432 µg/L, respectively, were more than three times the spike concentrations of 0.0233 µg/L and 0.0237 µg/L and it is not possible to assess data usability for these analytes in this sample based on the MS recoveries.

7.1.11 LABORATORY DUPLICATE PRECISION

SGS performed duplicate analyses on samples LORNG_BW05007_06102024, LORNG_JBW7326A_05142024, and LORNG_OW20005_05102024. Precision between duplicate analyses was acceptable, with RPDs less than 30% or differences between analyte concentrations less than the LOQ.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the laboratory-specified 20 to 180% limits for $^{13}C_2$-1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS), $^{13}C_2$-6:2 FTS, and $^{13}C_2$-1H,1H, 2H,2H-perfluorodecane sulfonic acid (8:2 FTS), or the QAPP-specified 20 to 150% interim limits for the remaining EISs, with the following exceptions:

– Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 185% in the undiluted analysis of sample LORNG_LYS07007DDUP_06192024. WSP J qualified the detected 4:2 FTS result from this sample because of the high EIS recovery. (J, EISH)

– Recoveries of the EISs d_7-NMeFOSE and d_9-NEtFOSE were high in the 1:5 dilution analyses of samples LORNG_AA07MW-02_06252024FD (152%, 169%) and LORNG_JBW8003B_06182024 (160%, 190%), the 1:2 dilution analysis of sample LORNG_BW06006_06132024 (161%, 156%), and the 1:10 dilution analyses of samples LORNG_LYS07007D_06192024 (194%, 206%) and LORNG_LYS05012D_06192024 (163%, 182%). NMeFOSE and NEtFOSE were not reported from the associated analyses and data usability is not adversely affected by the high EIS recoveries.

– Recovery of the EIS $^{13}C_4$-perfluorobutanoic acid (PFBA) was extremely low at 2% in the original extraction of sample LORNG_BW06006_06112024HS. SGS re-extracted the sample and reported the PFBA result from the re-extraction. Data usability is not adversely affected by the low EIS recovery.

- Recoveries of the EISs $^{13}C_2$-4:2 FTS and $^{13}C_2$-6:2 FTS were high at 214% and 183%, respectively, in the undiluted analyses of sample LORNG_GC_BW002D_05152024. SGS chose to report the 4:2 FTS and 6:2 FTS result from the 1:10 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.
- Recovery of the EIS $^{13}C_2$-6:2 FTS was high at 191% in the undiluted analysis of sample LORNG_LYS07007D_06192024. 6:2 FTS was not reported from the associated analysis and data usability is not adversely affected by the high EIS recovery.
- Recoveries of the EISs d_5-NEtFOSA (159%), d_7-NMeFOSE (200%), and d_9-NEtFOSE (226%) were high in the 1:10 dilution performed on sample LORNG_LYS07007DDUP_06192024. NEtFOSA, NMeFOSE, and NEtFOSE were not reported from the associated analysis and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EISs d_7-NMeFOSE (192%), d_9-NEtFOSE (237%), $^{13}C_2$-8:2 FTS (189%), and $^{13}C_3$-hexafluoropropylene oxide dimer acid (HFPO-DA [163%]) were high in the 1:10 dilution analysis of sample LORNG_LYS07007SDUP_06192024. NMeFOSE, NEtFOSE, 8:2 FTS, HFPO-DA, 4,8-dioxa-3H-perfluorononanoic acid (ADONA), 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS), and 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) were not reported from the associated analysis and data usability is not adversely affected by the high EIS recoveries.
- Recovery of the EIS d_9-NEtFOSE was high at 191% in the 1:10 dilution analysis of sample LORNG_MMW8015_06182024. NEtFOSE was not reported from the associated analysis and data usability is not adversely affected by the high EIS recovery.
- Recovery of the EIS d_7-NMeFOSE was high at 158% in the 1:5 dilution analysis of sample LORNG_SB/OW12001_06142024. NMeFOSE was not reported from the 1:5 dilution and data usability is not adversely affected by the high EIS recovery.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits, with the following exception:

- Recovery of the NIS $^{13}C_2$-perfluorodecanoic acid (PFDA) was high at 207% in the 1:10 dilution analysis of sample LORNG_MMW8015_06182024. PFDA, perfluoroundecanoic acid, perfluorododecanoic acid, perflurotridecanoic acid, and perfluorotetradecanoic acid were not reported from this analysis and data usability is not adversely affected by the high NIS recovery.

7.1.14 ION RATIOS

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV, with the following exceptions:

- Ion ratios for PFHxA were high in samples LORNG_JMW1762_05152024 (152%), LORNG_MMW0009_05132024 (189%), LORNG_OW02002_05142024 (211%), LORNG_OW20001_05102024 (156%), LORNG_OW20005_05102024 (159%), LORNG_UNK-034_280_06112024 (195%), and LORNG_USMW013_05142024 (252%). WSP J qualified the detected PFHxA results from these samples because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for perfluoroheptanoic acid (PFHpA) were high in samples LORNG_BW10007_05152024 and LORNG_EBGB_BW002_05132024 at 161% and 151%, respectively. WSP J qualified the detected PFHpA results from these samples because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for PFDA and perfluorooctanesulfonamide (PFOSA) were high at 186% and 156%, respectively, in sample LORNG_RFW1145_75_06112024. WSP J qualified the detected PFDA and PFOSA results from this sample because the ion ratios were outside of limits. (J, IAG)
- The ion ratio for perfluorobutanesulfonic acid (PFBS) was high at 174% in sample LORNG_UNK-034_80_06112024. WSP J qualified the detected PFBS result from this sample because the ion ratio was outside of limits. (J, IAG)

- Ion ratios for perfluorononanesulfonc acid (PFNS) were low in samples LORNG_BSMW3S_06182024 (49%), LORNG_JBW8003B_06182024 (43%), LORNG_JBW8004B_06112024 (39%), and LORNG_LYS05012S_06192024 (45%). WSP J qualified the detected PFNS results from these samples because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for PFNS and PFOSA were outside of limits in samples LORNG_AA07MW-01_06112024 (49%, 156%), LORNG_BW01007_06102024 (44%, 200%),LORNG_JBW7339A_06132024 (38%, 151%), LORNG_LYS01007S_06192024 (34%, 169%), and LORNG_OW01002_06142024 (38%, 183%). WSP J qualified the detected PFNS and PFOSA results from these samples because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for PFNS (39%), perfluorodecanesulfonic acid (PFDS [39%]), and PFOSA (156%) were outside of limits in sample LORNG_OW01004_06102024. WSP J qualified the detected PFNS, PFDS, and PFOSA results from this sample because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for PFDS and PFOSA were outside of limits at 34% and 166%, respectively, in sample LORNG_RFW1145_35_06112024. WSP J qualified the detected PFDS and PFOSA results from this sample because the ion ratios were outside of limits. (J, IAG)
- Ion ratios for PFOSA were high in samples LORNG_AA07MW-02_06252024FD (151%), LORNG_BW07003_06112024 (203%), LORNG_BW12005_06102024 (155%), LORNG_JBW7339B_06132024 (157%), LORNG_JMW-0602_05152024 (183%), LORNG_JPZ7602_06132024 (189%),LORNG_LYS01007D_06192024 (160%), LORNG_LYS05012D_06192024 (274%), and LORNG_OW07003_06112024 (197%). WSP J qualified the detected PFOSA result from these samples because the ion ratios were outside of limits. (J, IAG)

7.1.15 STAGE 4 VALIDATION

WSP did not perform Stage 4 validation on the samples reviewed in this report.

7.1.16 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS' J qualifiers. (J, TR)

Data from the field sample are reported in ng/L, while QC results are reported in µg/L. Spiked concentrations are correct and WSP did not qualify any data based on the unit mismatch.

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_AA07MW-02_06252024, LORNG_AA20MW-02_06112024, LORNG_BW01008_06122024, LORNG_JBW7347B_05132024, LORNG_JMW-0602_05152024, LORNG_JMW0982_05132024, LORNG_JMW6001_05142024, and LORNG_OW20004_05102024. RPDs between primary and field duplicate results were less than the QAPP-specified maximum of 30% or differences between primary and duplicate results were less than the LOQ, indicating acceptable sampling and analytical precision. Results from the primary samples and their field duplicate are presented in Table 4.

9 INTERLABORATORY SPLIT PRECISION

Samples LORNG_BW10007_05152024, LORNG_JBW7326A_05142024, and LORNG_JBW7345B_05152024 were analyzed both by SGS and Bureau Verita Canada as interlaboratory splits. RPDs between the primary and split results were less than 30%, indicating acceptable analytical precision and comparability between results from the primary and split laboratories.

Results from the primary and split samples are presented in Tabe 5.

10 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 4,040 data records from the field sample during this validation. Validated analytical results are presented in Table 2.

Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- J: WSP J qualified 375 records (9.3%) because of EIS recoveries outside of limits, ion ratios outside of limits and/or detected concentrations less than the LOQ.
- J-: WSP J- qualified one record (0.02%) because of low MS recovery.
- UJ: WSP UJ qualified 46 records (1.1%) because of ICV recoveries outside of limits or high CCV recoveries.

Data qualified during validation are summarized in Table 3.

11 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15756	BW05008	LORNG_BW05008_05142024	FC15756-36	5/14/2024	WG	N	40
	BW05011D	LORNG_BW05011D_05142024	FC15756-41	5/14/2024	WG	N	40
	BW05011S	LORNG_BW05011S_05152024	FC15756-37	5/15/2024	WG	N	40
	BW10007	LORNG_BW10007_05152024	FC15756-38	5/15/2024	WG	N	40
	EBGB_BW002	LORNG_EBGB_BW002_05132024	FC15756-8	5/13/2024	WG	N	40
	FIELDQC	LORNG_EB009_05142024	FC15756-15	5/14/2024	WQ	EB	40
		LORNG_EB010_05132024	FC15756-1	5/13/2024	WQ	EB	40
		LORNG_EB011_05142024	FC15756-16	5/14/2024	WQ	EB	40
		LORNG_EB012_05152024	FC15756-22	5/15/2024	WQ	EB	40
		LORNG_EB013_05152024	FC15756-23	5/15/2024	WQ	EB	40
		LORNG_EB014_05152024	FC15756-24	5/15/2024	WQ	EB	40
	GC_BW002D	LORNG_GC_BW002D_05152024	FC15756-39	5/15/2024	WG	N	40
	JBW7203B	LORNG_JBW7203B_05102024	FC15756-48	5/10/2024	WG	N	40
	JBW7326A	LORNG_JBW7326A_05142024	FC15756-49	5/14/2024	WG	N	40
	JBW7326B	LORNG_JBW7326B_05142024	FC15756-50	5/14/2024	WG	N	40
	JBW7345B	LORNG_JBW7345B_05152024	FC15756-29	5/15/2024	WG	N	40
	JBW7347B	LORNG_JBW7347B_05132024	FC15756-2	5/13/2024	WG	N	40
		LORNG_JBW7347B_05132024FD	FC15756-3	5/13/2024	WG	FD	40
	JBW7614	LORNG_JBW7614_05152024	FC15756-30	5/15/2024	WG	N	40
	JBW8009	LORNG_JBW8009_05102024	FC15756-4	5/10/2024	WG	N	40
	JMW-0416B	LORNG_JMW-0416B_05132024	FC15756-9	5/13/2024	WG	N	40
	JMW-0505	LORNG_JMW-0505_05132024	FC15756-10	5/13/2024	WG	N	40
	JMW-0602	LORNG_JMW-0602_05152024	FC15756-25	5/15/2024	WG	N	40
		LORNG_JMW-0602_05152024FD	FC15756-26	5/15/2024	WG	FD	40
	JMW-0603	LORNG_JMW-0603_05142024	FC15756-42	5/14/2024	WG	N	40
	JMW0682	LORNG_JMW0682_05152024	FC15756-31	5/15/2024	WG	N	40
	JMW-0806	LORNG_JMW-0806_05142024	FC15756-43	5/14/2024	WG	N	40
	JMW0982	LORNG_JMW0982_05132024	FC15756-11	5/13/2024	WG	N	40
		LORNG_JMW0982_05132024FD	FC15756-12	5/13/2024	WG	FD	40
	JMW1762	LORNG_JMW1762_05152024	FC15756-44	5/15/2024	WG	N	40
	JMW3501	LORNG_JMW3501_05132024	FC15756-5	5/13/2024	WG	N	40
	JMW3601	LORNG_JMW3601_05152024	FC15756-32	5/15/2024	WG	N	40
	JMW6001	LORNG_JMW6001_05142024	FC15756-17	5/14/2024	WG	N	40
		LORNG_JMW6001_05142024FD	FC15756-18	5/14/2024	WG	FD	40
	LF2MW2	LORNG_LF2MW2_05152024	FC15756-33	5/15/2024	WG	N	40
	MMW0009	LORNG_MMW0009_05132024	FC15756-13	5/13/2024	WG	N	40
	MMW0132	LORNG_MMW0132_05142024	FC15756-19	5/14/2024	WG	N	40
	MMW0422	LORNG_MMW0422_05132024	FC15756-45	5/13/2024	WG	N	40
	NP_OW001	LORNG_NP_OW001_05152024	FC15756-46	5/15/2024	WG	N	40
	OW02002	LORNG_OW02002_05142024	FC15756-20	5/14/2024	WG	N	40
	OW10007	LORNG_OW10007_05152024	FC15756-40	5/15/2024	WG	N	40
	OW20001	LORNG_OW20001_05102024	FC15756-34	5/10/2024	WG	N	40
	OW20003	LORNG_OW20003_05152024	FC15756-27	5/15/2024	WG	N	40
	OW20004	LORNG_OW20004_05102024	FC15756-6	5/10/2024	WG	N	40
		LORNG_OW20004_05102024FD	FC15756-7	5/10/2024	WG	FD	40
	OW20005	LORNG_OW20005_05102024	FC15756-14	5/10/2024	WG	N	40
	OW24001	LORNG_OW24001_05152024	FC15756-28	5/15/2024	WG	N	40
	UNK-036	LORNG_UNK-036_05142024	FC15756-47	5/14/2024	WG	N	40
FC15756	USMW013	LORNG_USMW013_05142024	FC15756-21	5/14/2024	WG	N	40

Prepared by:AKN
Date:9/3/24
Checked by:MLB
Date:9/10/2024

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15756	USMW019	LORNG_USMW019_05152024	FC15756-35	5/15/2024	WG	N	40
FC16453	8711-MW07	LORNG_8711-MW07_06122024	FC16453-8	6/12/2024	WG	N	40
	AA07MW-01	LORNG_AA07MW-01_06112024	FC16453-20	6/11/2024	WG	N	40
	AA20MW-02	LORNG_AA20MW-02_06112024	FC16453-15	6/11/2024	WG	N	40
		LORNG_AA20MW-02_06112024FD	FC16453-16	6/11/2024	WG	FD	40
	BW01007	LORNG_BW01007_06102024	FC16453-21	6/10/2024	WG	N	40
	BW01008	LORNG_BW01008_06122024	FC16453-9	6/12/2024	WG	N	40
		LORNG_BW01008_06122024FD	FC16453-10	6/12/2024	WG	FD	40
	BW05007	LORNG_BW05007_06102024	FC16453-22	6/10/2024	WG	N	40
	BW06006	LORNG_BW06006_06112024HS	FC16453-1	6/11/2024	WG	N	40
	BW07003	LORNG_BW07003_06112024	FC16453-23	6/11/2024	WG	N	40
	BW12005	LORNG_BW12005_06102024	FC16453-2	6/10/2024	WG	N	40
	FIELDQC	LORNG_EB025_06122024	FC16453-11	6/12/2024	WQ	EB	40
		LORNG_EB026_06122024	FC16453-12	6/12/2024	WQ	EB	40
	JBW7711	LORNG_JBW7711_06122024	FC16453-13	6/12/2024	WG	N	40
	JBW7742A	LORNG_JBW7742A_06112024	FC16453-3	6/11/2024	WG	N	40
	JBW8004B	LORNG_JBW8004B_06112024	FC16453-17	6/11/2024	WG	N	40
	JMW0301C	LORNG_JMW0301C_06122024	FC16453-14	6/12/2024	WG	N	40
	JMW8011	LORNG_JMW8011_06112024	FC16453-18	6/11/2024	WG	N	40
	OW01004	LORNG_OW01004_06102024	FC16453-24	6/10/2024	WG	N	40
	OW07003	LORNG_OW07003_06112024	FC16453-25	6/11/2024	WG	N	40
	RFW1145	LORNG_RFW1145_35_06112024	FC16453-26	6/11/2024	WG	N	40
		LORNG_RFW1145_75_06112024	FC16453-19	6/11/2024	WG	N	40
	UNK-033	LORNG_UNK-033_06112024	FC16453-4	6/11/2024	WG	N	40
	UNK-034	LORNG_UNK-034_180_06112024	FC16453-5	6/11/2024	WG	N	40
		LORNG_UNK-034_280_06112024	FC16453-6	6/11/2024	WG	N	40
		LORNG_UNK-034_80_06112024	FC16453-7	6/11/2024	WG	N	40
FC16855	AA07MW-02	LORNG_AA07MW-02_06252024	FC16855-11	6/25/2024	WG	N	40
		LORNG_AA07MW-02_06252024FD	FC16855-12	6/25/2024	WG	FD	40
	BSMW3S	LORNG_BSMW3S_06182024	FC16855-8	6/18/2024	WG	N	40
	BW06006	LORNG_BW06006_06132024	FC16855-17	6/13/2024	WG	N	40
	FIELDQC	LORNG_EB028_06132024	FC16855-1	6/13/2024	WQ	EB	40
		LORNG_EB029_06132024	FC16855-2	6/13/2024	WQ	EB	40
		LORNG_EB030_06212024	FC16855-13	6/21/2024	WQ	EB	40
	FMW3410	LORNG_FMW3410_06132024	FC16855-18	6/13/2024	WG	N	40
	JBW7338B	LORNG_JBW7338B_06212024	FC16855-24	6/21/2024	WG	N	40
	JBW7339A	LORNG_JBW7339A_06132024	FC16855-3	6/13/2024	WG	N	40
	JBW7339B	LORNG_JBW7339B_06132024	FC16855-19	6/13/2024	WG	N	40
	JBW8003B	LORNG_JBW8003B_06182024	FC16855-9	6/18/2024	WG	N	40
	JEBS-4	LORNG_JEBS-4_06212024	FC16855-25	6/21/2024	WG	N	40
	JMW0010	LORNG_JMW0010_06132024	FC16855-20	6/13/2024	WG	N	40
	JMW2680	LORNG_JMW2680_06122024	FC16855-21	6/12/2024	WG	N	40
	JPZ7601	LORNG_JPZ7601_06132024	FC16855-4	6/13/2024	WG	N	40
	JPZ7602	LORNG_JPZ7602_06132024	FC16855-5	6/13/2024	WG	N	40
	LYS01007D	LORNG_LYS01007D_06192024	FC16855-14	6/19/2024	WI	N	40
	LYS01007S	LORNG_LYS01007S_06192024	FC16855-26	6/19/2024	WI	N	40
		LORNG_LYS07007S_06192024	FC16855-15	6/19/2024	WI	N	40
	LYS05012D	LORNG_LYS05012D_06192024	FC16855-27	6/19/2024	WI	N	40
	LYS05012S	LORNG_LYS05012S_06192024	FC16855-28	6/19/2024	WI	N	40

Prepared by:AKN
Date:9/3/24
Checked by:MLB
Date:9/10/2024

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC16855	LYS07007D	LORNG_LYS07007D_06192024	FC16855-29	6/19/2024	WI	N	40
	LYS07007DDUP	LORNG_LYS07007DDUP_06192024	FC16855-30	6/19/2024	WI	N	40
	LYS07007SDUP	LORNG_LYS07007SDUP_06192024	FC16855-31	6/19/2024	WI	N	40
	MMW0531	LORNG_MMW0531_06132024	FC16855-23	6/13/2024	WG	N	40
	MMW8015	LORNG_MMW8015_06182024	FC16855-32	6/18/2024	WG	N	40
	OW01002	LORNG_OW01002_06142024	FC16855-6	6/14/2024	WG	N	40
	OW07001	LORNG_OW07001_06242024	FC16855-16	6/24/2024	WG	N	40
	SB/OW12001	LORNG_SB/OW12001_06142024	FC16855-10	6/14/2024	WG	N	40
	UNK-026	LORNG_LORNG-UNK-026_06122024	FC16855-22	6/12/2024	WG	N	40
	USMW012	LORNG_USMW012_06182024	FC16855-33	6/18/2024	WG	N	40
	USMW021	LORNG_USMW021_06142024	FC16855-7	6/14/2024	WG	N	40

Notes:

T = Total

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

WG = Groundwater, WQ = Water Quality Control

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC15756															
			Location	BW05008		BW05011D		BW05011S		BW10007		EBGB_BW002		FIELDQC					
			Sample Date	5/14/2024		5/14/2024		5/15/2024		5/15/2024		5/13/2024		5/14/2024				5/13/2024	
			Sample ID	LORNG_BW05008_05142024		LORNG_BW05011D_05142024		LORNG_BW05011S_05152024		LORNG_BW10007_05152024		LORNG_EBGB_BW002_05132024		LORNG_EB009_05142024		LORNG_EB011_05142024		LORNG_EB010_05132024	LORNG_EB012_05152024
			QC Code	N		N		N		N		N		EB		EB		EB	EB
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	J	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		Perfluoropentanoic acid (PFPeA)	NG/L	5.9	J	2	U	1.9	U	1.9	U	1.6	J	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2.9	J	2	U	0.48	J	0.49	J	1.4	J	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.5	J	2	U	1.9	U	0.61	J	0.59	J	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.2	J	0.98	U	0.93	U	1.3	J	1.7	J	1.1	J	0.91	U	0.91	U	0.92	U
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	2	U	1.9	U	1.1	J	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.1	J	2	U	1.9	U	0.49	J	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.3		2	U	0.7	J	2.7	J	5.5		1.9	U	1.8	U	1.8	U	1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	J	2	U	2	J	2.7	J	6.9		1.9	U	2.4	J	1.8	U	1.8	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.8	U	7.4	U	7.4	U	7.3	U	7.4	U	7.3	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.8	U	3.3	J	7.4	U	7.3	U	7.4	U	7.3	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.8	U	7.4	U	7.4	U	7.3	U	7.4	U	7.3	U	7.3	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	UJ	3.9	UJ	3.7	UJ	3.7	UJ	3.6	UJ	3.7	U	3.6	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	20	U	19	U	19	U	18	U	19	U	18	U	18	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	20	U	19	U	19	U	18	U	19	U	18	U	18	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

		SDG		FC15756																
		Location		BW05008		BW05011D		BW05011S		BW10007		EBGB_BW002		FIELDQC						
		Sample Date		5/14/2024		5/14/2024		5/15/2024		5/15/2024		5/13/2024		5/14/2024				5/13/2024		
		Sample ID		LORNG_BW05008_05142024		LORNG_BW05011D_05142024		LORNG_BW05011S_05152024		LORNG_BW10007_05152024		LORNG_EBGB_BW002_05132024		LORNG_EB009_05142024		LORNG_EB011_05142024		LORNG_EB010_05132024		LORNG_EB012_05152024
		QC Code		N		N		N		N		N		EB		EB		EB		EB
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U	3.6	U	3.6	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.8	U	9.3	U	9.3	U	9.1	U	9.3	U	9.1	U	9.1	U	9.2	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	20	U	19	U	19	U	18	U	19	U	18	U	18	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	20	U	19	U	19	U	18	U	19	U	18	U	18	U	18	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG					FC15756											
			Location					GC_BW002D		JBW7203B		JBW7326A		JBW7326B		JBW7345B		JBW7347B	
			Sample Date	5/15/2024				5/15/2024		5/10/2024		5/14/2024		5/14/2024		5/15/2024		5/13/2024	
			Sample ID	LORNG_EB013_05152024		LORNG_EB014_05152024		LORNG_GC_BW002D_05152024		LORNG_JBW7203B_05102024		LORNG_JBW7326A_05142024		LORNG_JBW7326B_05142024		LORNG_JBW7345B_05152024		LORNG_JBW7347B_05132024	LORNG_JBW7347B_05132024FD
			QC Code	EB		EB		N		N		N		N		N		N	FD
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	U	3.8	U	3.7	U	6.2	J	5.2	J	5	J	4.2	J	4.9	J	4.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	U	1.9	U	1.9	U	11.5		8.5		7.4		5.9	J	10.4		10	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8	U	1.9	U	1.9	U	9.2		7.2		5.9		7		10.6		10.3	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	U	1.9	U	1.9	U	6.2		4.4		4		4.7		4.9		4.9	
		Perfluorooctanoic acid (PFOA)	NG/L	0.91	U	0.94	U	0.93	U	6.5		5.4		5.3		5.5		8.7		8.8	
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.9	U	1.9	U	0.78	J	1.9	U	0.63	J	1.9	U	1.9	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	1.9	U	1.9	U	2.3	J	2.3	J	2.3	J	2.2	J	2	J	1.9	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.8	U	3.7	U	2.8	J	2.9	J	3.2	J	3	J	3	J	2.4	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8	U	1.9	U	1.9	U	27.9		33		34		29.5		42.4		41.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.9	U	1.9	U	0.97	J	1.2	J	1	J	0.77	J	0.87	J	0.85	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8	U	1.9	U	1.9	U	32.4		28.3		26		25.7		17		16.5	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.5	U	74	U	7.3	U	7.4	U	7.4	U	7.4	U	7.4	U	7.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.5	U	74	U	7.3	U	7.4	U	7.4	U	7.4	U	7.4	U	7.2	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.5	U	7.4	U	7.3	U	7.4	U	7.4	U	7.4	U	7.4	U	7.2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.8	U	3.7	UJ	3.6	UJ	3.7	UJ	3.7	UJ	3.7	UJ	3.7	UJ	3.6	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	19	U	19	U	18	U	19	U	19	U	19	U	19	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	19	U	19	U	18	U	19	U	19	U	19	U	19	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.8	U	3.7	U	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U

Prepared by: AKN
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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG						FC15756											
Location						GC_BW002D		JBW7203B		JBW7326A		JBW7326B		JBW7345B		JBW7347B	
Sample Date				5/15/2024		5/15/2024		5/10/2024		5/14/2024		5/14/2024		5/15/2024		5/13/2024	
Sample ID				LORNG_EB013_05152024		LORNG_GC_BW002D_05152024		LORNG_JBW7203B_05102024		LORNG_JBW7326A_05142024		LORNG_JBW7326B_05142024		LORNG_JBW7345B_05152024		LORNG_JBW7347B_05132024	LORNG_JBW7347B_05132024FD
QC Code				EB	EB	N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier		Result Qualifier	Result Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.8 U	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U	3.6 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.8 U	3.7 U		3.6 U		3.7 U		3.7 U		3.7 U		3.7 U	3.6 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.9 U	1.9 U		1.8 U		1.9 U		1.9 U		1.9 U		1.9 U	1.8 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1 U	9.4 U	9.3 U		9.1 U		9.3 U		9.3 U		9.3 U		9.3 U	9 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	19 U	19 U		18 U		19 U		19 U		19 U		19 U	18 U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U	19 U	19 U		18 U		19 U		19 U		19 U		19 U	18 U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG																		FC1
			Location	JBW7614		JBW8009		JMW-0416B		JMW-0505		JMW-0602				JMW-0603		JMW0682		JMW-0806	
			Sample Date	5/15/2024		5/10/2024		5/13/2024		5/13/2024		5/15/2024				5/14/2024		5/15/2024		5/14/2024	
			Sample ID	LORNG_JBW7614_05152024		LORNG_JBW8009_05102024		LORNG_JMW-0416B_05132024		LORNG_JMW-0505_05132024		LORNG_JMW-0602_05152024		LORNG_JMW-0602_05152024FD		LORNG_JMW-0603_05142024		LORNG_JMW0682_05152024		LORNG_JMW-0806_05142024	
			QC Code	N		N		N		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3	J	7.4	J	3.7	J	4.2	J	3.9	U	4	U	6.6	J	3.4	J	2.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.2	J	13.5		5.1	J	3.8	J	3.6	J	3.3	J	1.3	J	2.7	J	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	J	8.3		2.1	J	3.8		8.8		9.1		0.71	J	2.8	J	1.6	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.1	J	7.1		0.61	J	3.8		2.5	J	2.7	J	1.8	U	1.4	J	0.75	J
		Perfluorooctanoic acid (PFOA)	NG/L	2.1	J	5		1	J	4.1		13.4		13.6		1.8	J	2.4	J	2.2	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	1.8	U	0.8	J	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.57	J	1.6	J	1.8	U	1.2	J	2.1	J	2.1	J	0.81	J	1.9	J	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	1.8	J	3.6	U	1.4	J	3	J	3.1	J	3.6	U	2.1	J	3.6	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	4.5		20.3		3.5	J	12.7		49.4		51.5		4.8		16.5		7.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	1.8	J	1.7	J	1.8	U	1.9	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13.7		19.5		4.1		9.1		57.1		56.5		1.4	J	11		13.1	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.3	U	7.3	U	7.3	U	7.8	U	8	U	7.3	U	7.5	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.3	U	7.3	U	7.3	U	7.8	U	8	U	7.3	U	7.5	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.3	U	7.3	U	7.3	U	7.8	U	8	U	7.3	U	7.5	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	0.89	J	0.95	J	1.8	U	1.9	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	UJ	3.6	UJ	3.6	UJ	3.6	UJ	3.9	UJ	4	UJ	3.6	UJ	3.8	UJ	3.6	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	18	U	18	U	20	U	20	U	18	U	19	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	18	U	18	U	20	U	20	U	18	U	19	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG																	FC1
			Location	JBW7614		JBW8009		JMW-0416B		JMW-0505		JMW-0602				JMW-0603		JMW0682		JMW-0806	
			Sample Date	5/15/2024		5/10/2024		5/13/2024		5/13/2024		5/15/2024				5/14/2024		5/15/2024		5/14/2024	
			Sample ID	LORNG_JBW7614_05152024		LORNG_JBW8009_05102024		LORNG_JMW-0416B_05132024		LORNG_JMW-0505_05132024		LORNG_JMW-0602_05152024		LORNG_JMW-0602_05152024FD		LORNG_JMW-0603_05142024		LORNG_JMW0682_05152024		LORNG_JMW-0806_05142024	
			QC Code	N		N		N		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.6	U	3.6	U	3.6	U	3.9	U	4	U	3.6	U	3.8	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.8	U	1.8	U	2	U	2	U	1.8	U	1.9	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.1	U	9.1	U	9.1	U	9.8	U	10	U	9.1	U	9.4	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	18	U	18	U	20	U	20	U	18	U	19	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	18	U	18	U	20	U	20	U	18	U	19	U	18	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				5756																
Location				JMW0982				JMW1762		JMW3501		JMW3601		JMW6001				LF2MW2		MMW0009	
Sample Date				5/13/2024				5/15/2024		5/13/2024		5/15/2024		5/14/2024				5/15/2024		5/13/2024	
Sample ID				LORNG_JMW0982_05132024		LORNG_JMW0982_05132024FD		LORNG_JMW1762_05152024		LORNG_JMW3501_05132024		LORNG_JMW3601_05152024		LORNG_JMW6001_05142024		LORNG_JMW6001_05142024FD		LORNG_LF2MW2_05152024		LORNG_MMW0009_05132024	
QC Code				N		FD		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	J	3.1	J	5.5	J	3.6	U	2.4	J	12.1	J	12.1	J	3.7	U	1.8	J
		Perfluoropentanoic acid (PFPeA)	NG/L	1.6	J	1.8	J	5	J	1.4	J	1.9	J	6.9	J	8.4	J	1.9	U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	3.2	J	3.5	J	4.8	J	0.91	J	1.9	J	8		9		1.2	J	0.82	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	J	2.3	J	3.3	J	0.52	J	1.6	J	6		6.2		0.69	J	0.54	J
		Perfluorooctanoic acid (PFOA)	NG/L	5.5		5.5		3.7		1	J	5.4		7.9		8.5		3.2	J	2.1	J
		Perfluorononanoic acid (PFNA)	NG/L	0.71	J	0.82	J	1.8	U	1.8	U	1.8	U	1.7	J	1.3	J	1.9	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8	U	0.49	J	1.7	J	1.8	U	0.76	J	1.7	J	1.8	J	0.57	J	1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.6	U	2.3	J	3.6	U	3.6	U	2.8	J	2.2	J	3.7	U	3.6	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	9.2		9.5		26.6		2.7	J	7.4		32.8		33.2		6.5		14.7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.71	J	0.55	J	0.9	J	1.8	U	1.8	U	0.91	J	0.98	J	1.9	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	29.1		29.6		14.9		1.1	J	8.4		36.7		34.9		4.8		4.1	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.2	U	7.3	U	8.3	U	8.8	U	7.4	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.2	U	7.3	U	6.1	J	5.9	J	7.4	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.2	U	7.3	U	8.3	U	8.8	U	7.4	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.7	J	2.4	J	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	UJ	3.6	UJ	3.6	UJ	3.6	UJ	3.6	UJ	4.2	UJ	4.4	UJ	3.7	UJ	3.6	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	8.3		6.2		3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	1.8	J	1.9	J	3.6	U	3.6	UJ	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	18	U	18	U	18	U	18	U	21	U	22	U	19	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	18	U	18	U	18	U	18	U	21	U	22	U	19	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				5756																
Location				JMW0982				JMW1762		JMW3501		JMW3601		JMW6001				LF2MW2		MMW0009	
Sample Date				5/13/2024				5/15/2024		5/13/2024		5/15/2024		5/14/2024				5/15/2024		5/13/2024	
Sample ID				LORNG_JMW0982_05132024		LORNG_JMW0982_05132024FD		LORNG_JMW1762_05152024		LORNG_JMW3501_05132024		LORNG_JMW3601_05152024		LORNG_JMW6001_05142024		LORNG_JMW6001_05142024FD		LORNG_LF2MW2_05152024		LORNG_MMW0009_05132024	
QC Code				N		FD		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	4.2	U	4.4	U	3.7	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.1	U	2.2	U	1.9	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.1	U	9.1	U	9	U	9.1	U	10	U	11	U	9.3	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	18	U	18	U	18	U	21	U	22	U	19	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	18	U	18	U	18	U	21	U	22	U	19	U	18	U

Notes:

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FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC15756															
			Location	MMW0132		MMW0422		NP_OW001		OW02002		OW10007		OW20001		OW20003		OW20004	
			Sample Date	5/14/2024		5/13/2024		5/15/2024		5/14/2024		5/15/2024		5/10/2024		5/15/2024		5/10/2024	
			Sample ID	LORNG_MMW0132_05142024		LORNG_MMW0422_05132024		LORNG_NP_OW001_05152024		LORNG_OW02002_05142024		LORNG_OW10007_05152024		LORNG_OW20001_05102024		LORNG_OW20003_05152024		LORNG_OW20004_05102024	LORNG_OW20004_05102024FD
			QC Code	N		N		N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6.1	J	2.4	J	3.7	U	2.3	J	4	J	3.1	J	3.9	J	1.7	J	3.6	U
		Perfluoropentanoic acid (PFPeA)	NG/L	12.6		2.2	J	1.9	U	1.8	U	4	J	2.5	J	2.9	J	1.8	U	1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	5.7		2.6	J	1.9	U	1.6	J	2.8	J	2	J	5.1		1.8	U	1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.2	J	1.6	J	1.9	U	1	J	1.4	J	1.3	J	1.5	J	1.8	U	1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.2	J	2.9	J	0.93	U	3.9		1.4	J	1.2	J	2.4	J	0.91	U	0.91	U
		Perfluorononanoic acid (PFNA)	NG/L	2.2	U	1.8	U	1.9	U	0.7	J	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.54	J	1.3	J	1.9	U	0.61	J	0.7	J	0.56	J	1.7	J	0.62	J	0.63	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.3	U	1.2	J	3.7	U	3.6	U	3.6	U	3.8	U	2.3	J	3.6	U	3.6	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.2	U	16.2		1.9	U	6.6		6.6		4.9		28.6		5.8		5.7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2.2	J	1.8	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.2	U	7.1		0.65	J	16.8		2.7	J	3.9		50.3		2.6	J	2	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.7	U	7.3	U	7.4	U	7.3	U	7.3	U	7.5	U	7.8	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.7	U	7.3	U	7.4	U	7.3	U	7.3	U	7.5	U	7.8	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.7	U	7.3	U	7.4	U	7.3	U	7.3	U	7.5	U	7.8	U	7.3	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.3	UJ	3.6	UJ	3.7	UJ	3.6	UJ	3.6	UJ	3.8	UJ	3.9	UJ	3.6	UJ	3.6	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	22	U	18	U	19	U	18	U	18	U	19	U	20	U	18	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	22	U	18	U	19	U	18	U	18	U	19	U	20	U	18	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC15756															
			Location	MMW0132		MMW0422		NP_OW001		OW02002		OW10007		OW20001		OW20003		OW20004		
			Sample Date	5/14/2024		5/13/2024		5/15/2024		5/14/2024		5/15/2024		5/10/2024		5/15/2024		5/10/2024		
			Sample ID	LORNG_MMW0132_05142024		LORNG_MMW0422_05132024		LORNG_NP_OW001_05152024		LORNG_OW02002_05142024		LORNG_OW10007_05152024		LORNG_OW20001_05102024		LORNG_OW20003_05152024		LORNG_OW20004_05102024		LORNG_OW20004_05102024FD	
			QC Code	N		N		N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.3	U	3.6	U	3.7	U	3.6	U	3.6	U	3.8	U	3.9	U	3.6	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U	1.8	U	1.9	U	1.8	U	1.8	U	1.9	U	2	U	1.8	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	11	U	9.1	U	9.3	U	9.1	U	9.1	U	9.4	U	9.8	U	9.1	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	22	U	18	U	19	U	18	U	18	U	19	U	20	U	18	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	22	U	18	U	19	U	18	U	18	U	19	U	20	U	18	U	18	U

Notes:

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J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

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NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC15756								FC16453				
			Location	OW20005		OW24001		UNK-036		USMW013		USMW019		8711-MW07		AA07MW-01		AA20MW-02		
			Sample Date	5/10/2024		5/15/2024		5/14/2024		5/14/2024		5/15/2024		6/12/2024		6/11/2024		6/11/2024		
			Sample ID	LORNG_OW20005_05102024		LORNG_OW24001_05152024		LORNG_UNK-036_05142024		LORNG_USMW013_05142024		LORNG_USMW019_05152024		LORNG_8711-MW07_06122024		LORNG_AA07MW-01_06112024		LORNG_AA20MW-02_06112024		LORNG_AA20MW-02_06112024FD	
			QC Code	N		N		N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5	J	5.7	J	3.6	U	3.6	U	3.8	U	9.7	J	311		11.7	J	12.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	4.6	J	12		1.8	U	1.8	U	1.9	U	16.8		1350		20		20.9	
		Perfluorohexanoic acid (PFHxA)	NG/L	3.5	J	6		1.8	U	0.89	J	1.9	U	24		1260		81.8		80.8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.6	J	3.1	J	1.8	U	1.8	U	1.9	U	13.2		789		16.9		17.1	
		Perfluorooctanoic acid (PFOA)	NG/L	4		1.7	J	1.1	J	3.5	J	1	J	14.7		974		31		29.6	
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.5	J	132		2.1	U	0.8	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	15.4		2.1	U	2.1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	3.2	J	2.1	U	2.1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.2	J	0.52	J	1.8	U	1.8	U	1.9	U	6.8		50.2		99.8		100	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.4	J	3.6	U	3.6	U	3.6	U	3.8	U	11		101		131		137	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	16.9		5.1		1.8	J	10		1.9	U	102		2650		691		751	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.82	J	1.8	U	1.8	U	1.8	U	1.9	U	5.3		75.8		20.2		20.7	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	20.5		4.4		5.9		10.6		2.5	J	243		4130		326		343	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	18.5	J	2.1	U	2.1	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	3.7	J	2.1	U	2.1	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U	7.8	U	16.5	J	8.2	U	8.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U	7.8	U	1170		8.2	U	8.2	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U	7.8	U	175		8.2	U	8.2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	205	J	2.1	U	2.1	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	UJ	3.6	UJ	3.6	UJ	3.6	UJ	3.8	UJ	3.9	U	3.8	U	4.1	U	4.1	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	5.7		4.1	U	4.1	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	18	U	18	U	18	U	19	U	20	U	19	U	21	U	21	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	18	U	18	U	18	U	19	U	20	U	19	U	21	U	21	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC15756										FC16453						
			Location	OW20005		OW24001		UNK-036		USMW013		USMW019		8711-MW07		AA07MW-01		AA20MW-02		
			Sample Date	5/10/2024		5/15/2024		5/14/2024		5/14/2024		5/15/2024		6/12/2024		6/11/2024		6/11/2024		
			Sample ID	LORNG_OW20005_05102024		LORNG_OW24001_05152024		LORNG_UNK-036_05142024		LORNG_USMW013_05142024		LORNG_USMW019_05152024		LORNG_8711-MW07_06122024		LORNG_AA07MW-01_06112024		LORNG_AA20MW-02_06112024		LORNG_AA20MW-02_06112024FD	
			QC Code	N		N		N		N		N		N		N		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U	3.9	U	3.8	U	4.1	U	4.1	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	2	U	1.9	U	2.1	U	2.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.1	U	9.1	U	9.1	U	9.4	U	9.8	U	9.6	U	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	18	U	18	U	19	U	20	U	19	U	21	U	21	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	18	U	18	U	19	U	20	U	19	U	21	U	21	U

Notes:

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FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC16453																			
			Location	BW01007		BW01008				BW05007		BW06006		BW07003		BW12005		FIELDQC					
			Sample Date	6/10/2024		6/12/2024				6/10/2024		6/11/2024		6/11/2024		6/10/2024		6/12/2024					
			Sample ID	LORNG_BW01007_06102024		LORNG_BW01008_06122024		LORNG_BW01008_06122024FD		LORNG_BW05007_06102024		LORNG_BW06006_06112024HS		LORNG_BW07003_06112024		LORNG_BW12005_06102024		LORNG_EB025_06122024		LORNG_EB026_06122024			
			QC Code	N		N		FD		N		N		N		N		EB		EB			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	22.6		4.8	J	4.6	J	44.3		31.3	J	71.1		49		3.9	U	4.1	U		
		Perfluoropentanoic acid (PFPeA)	NG/L	70.3		10.5		10.1		139		92.2		305		110		2	U	2.1	U		
		Perfluorohexanoic acid (PFHxA)	NG/L	95.9		17.9		17		82.8		70.7		235		290		2	U	2.1	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	37.6		5.9		5.3		54.1		59.6		119		51.2		2	U	2.1	U		
		Perfluorooctanoic acid (PFOA)	NG/L	104		24.6		23.2		38.2		52		186		91.3		0.98	U	1	U		
		Perfluorononanoic acid (PFNA)	NG/L	5.6		0.73	J	0.72	J	7.3		12.5		21		1.5	J	2	U	2.1	U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.5	J	1.9	U	2	U	2.1	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	11.9		4.3		4.1		19.3		21.4		69.8		120		2	U	2.1	U		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	18.1		7.2		6.5		24.7		27.2		110		154		3.9	U	4.1	U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	465		140		138		185		230		873		678		2	U	2.1	U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	11.7		2.3	J	2.1	J	7.6		8.8		54.3		72.6		2	U	2.1	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	432		57.1		55.7		411		492		2210		2830		0.83	J	2.1	U		
		Perfluorononanesulfonic acid (PFNS)	NG/L	0.85	J	2	U	2	U	0.79	J	2	U	4.8		4.3		2	U	2.1	U		
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7	U	7.8	U	7.9	U	7.5	U	8.1	U	5.6	J	4.1	J	7.8	U	8.2	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	24		7.8	U	7.9	U	28.4		12.7	J	429		163		7.8	U	8.2	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7	U	7.8	U	7.9	U	7.5	U	7.4	J	95.7		21.9		7.8	U	8.2	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	4.1	J	2	U	2	U	0.84	J	4.5		3.8	J	3.6	J	2	U	2.1	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	20	U	20	U	19	U	20	U	19	U	19	U	20	U	21	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	20	U	20	U	19	U	20	U	19	U	19	U	20	U	21	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U		

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				FC16453															
Location				BW01007		BW01008				BW05007		BW06006		BW07003		BW12005		FIELDQC	
Sample Date				6/10/2024		6/12/2024				6/10/2024		6/11/2024		6/11/2024		6/10/2024		6/12/2024	
Sample ID				LORNG_BW01007_06102024		LORNG_BW01008_06122024		LORNG_BW01008_06122024FD		LORNG_BW05007_06102024		LORNG_BW06006_06112024HS		LORNG_BW07003_06112024		LORNG_BW12005_06102024		LORNG_EB025_06122024	LORNG_EB026_06122024
QC Code				N		N		FD		N		N		N		N		EB	EB
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.9	U	4	U	3.8	U	4	U	3.8	U	3.9	U	3.9	U	4.1	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2	U	2	U	1.9	U	2	U	1.9	U	1.9	U	2	U	2.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U	9.8	U	9.9	U	9.4	U	10	U	9.4	U	9.7	U	9.8	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	20	U	20	U	19	U	20	U	19	U	19	U	20	U	21	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	20	U	20	U	19	U	20	U	19	U	19	U	20	U	21	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG						FC16453															
Location				JBW7711		JBW7742A		JBW8004B		JMW0301C		JMW8011		OW01004		OW07003		RFW1145			
Sample Date				6/12/2024		6/11/2024		6/11/2024		6/12/2024		6/11/2024		6/10/2024		6/11/2024		6/11/2024			
Sample ID				LORNG_JBW7711_06122024		LORNG_JBW7742A_06112024		LORNG_JBW8004B_06112024		LORNG_JMW0301C_06122024		LORNG_JMW8011_06112024		LORNG_OW01004_06102024		LORNG_OW07003_06112024		LORNG_RFW1145_35_06112024		LORNG_RFW1145_75_06112024	
QC Code				N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.2	J	6.7	U	58		9.6	J	62.2		32.8		80.6		31.2		22.9	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8	J	6.6	J	161		25.5		172		99.9		344		92.6		68.9	
		Perfluorohexanoic acid (PFHxA)	NG/L	6.6		9		337		43.1		392		163		279		242		163	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.1	J	4	J	115		18.7		128		73.5		142		67.8		39.6	
		Perfluorooctanoic acid (PFOA)	NG/L	8.6		3.2	J	284		52.5		318		120		225		277		195	
		Perfluorononanoic acid (PFNA)	NG/L	2	U	3.3	U	18.6		1.9	J	23.4		11.7		30.1		14.4		5	
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	3.3	U	1.5	J	2	U	2	J	0.73	J	1.4	J	2.6	J	0.76	J
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.4	J	3.3	U	36.9		5.2		43.6		21.6		83.8		24.1		16.3	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.2	J	6.7	U	58.3		8.1		70.5	J-	31.2		142		38.1		24.5	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	75		7		1650		275		2040		755		1150		1370		811	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2	J	3.3	U	35		3.4	J	35.9		15.7		72.6		25.4		15.8	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	110		5	J	1810		121		2260		959		2650		1390		689	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	3.3	U	4.4	J	2	U	4.4		2.4	J	1.9	U	3.7		0.7	J
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	0.72	J	1.9	U	1.6	J	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.9	U	13	U	8.3	U	7.9	U	7.9	U	7.4	U	8	J	7.4	U	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.9	U	396		136		5.3	J	145		57.1		560		72.8		63	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.9	U	13	U	56		7.9	U	42.3		47.4		113		21		18.1	J
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	3.3	U	31.1		9		38.5		14.7	J	4.2	J	30.3	J	9.6	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	33	U	21	U	20	U	20	U	19	U	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	33	U	21	U	20	U	20	U	19	U	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG							FC16453												
Location				JBW7711		JBW7742A		JBW8004B		JMW0301C		JMW8011		OW01004		OW07003		RFW1145	
Sample Date				6/12/2024		6/11/2024		6/11/2024		6/12/2024		6/11/2024		6/10/2024		6/11/2024		6/11/2024	
Sample ID				LORNG_JBW7711_06122024		LORNG_JBW7742A_06112024		LORNG_JBW8004B_06112024		LORNG_JMW0301C_06122024		LORNG_JMW8011_06112024		LORNG_OW01004_06102024		LORNG_OW07003_06112024		LORNG_RFW1145_35_06112024	LORNG_RFW1145_75_06112024
QC Code				N		N		N		N		N		N		N		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	6.7	U	4.2	U	4	U	4	U	3.7	U	3.7	U	3.7	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	3.3	U	2.1	U	2	U	2	U	1.9	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.9	U	17	U	10	U	9.9	U	9.9	U	9.3	U	9.3	U	9.3	U	9.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	33	U	21	U	20	U	20	U	19	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	33	U	21	U	20	U	20	U	19	U	19	U	19	U	19	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG																		
			Location	UNK-033		UNK-034				AA07MW-02				BSMW3S		BW06006					
			Sample Date	6/11/2024		6/11/2024				6/25/2024				6/18/2024		6/13/2024				6/13/	
			Sample ID	LORNG_UNK-033_06112024		LORNG_UNK-034_80_06112024		LORNG_UNK-034_180_06112024		LORNG_UNK-034_280_06112024		LORNG_AA07MW-02_06252024		LORNG_AA07MW-02_06252024FD		LORNG_BSMW3S_06182024		LORNG_BW06006_06132024		LORNG_EB028_06132024	
			QC Code	N		N		N		N		N		FD		N		N		EB	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	10.7	J	4	U	4.4	U	4.1	U	69		69.2		29.1		53.2		3.7	U
		Perfluoropentanoic acid (PFPeA)	NG/L	31.2		2	U	2.2	U	2	U	276		286		55.3		140		1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	37.5		0.81	J	0.71	J	0.63	J	330		340		70		108		1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	19.5		2	U	2.2	U	2	U	113		115		47.2		89.7		1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	26.1		0.89	J	1.1	U	1	U	362		347		68.4		73.9		0.93	U
		Perfluorononanoic acid (PFNA)	NG/L	3.4	J	2	U	2.2	U	2	U	12.9		13.3		8.5		17.7		1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U	2.2	U	2	U	0.81	J	1	J	0.67	J	0.52	J	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	20		0.58	J	2.2	U	2	U	59.5		60.6		9.8		32.2		1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	35.9		4	U	4.4	U	4.1	U	94.6		96.9		13.9		40		3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	342		2.5	J	1.6	J	1.6	J	1070		1090		246		308		1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	13.4		2	U	2.2	U	2	U	39.2		39.7		3.6	J	14.4		1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	303		4.6		1.9	J	2.9	J	1230		1100		181		750		1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	2.2	U	2	U	2.3	J	1.7	J	0.59	J	1.5	J	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8	U	8	U	8.9	U	8.2	U	17.3	J	20.3	J	7.4	U	7.4	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8	U	5.8	J	8.9	U	8.2	U	894		877		66.7		34.4		7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8	U	8	U	8.9	U	8.2	U	54.9		54.8		7.4	U	21.7		7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	2	U	2.2	U	2	U	35.2		32.7	J	20.1		7.1		1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U	22	U	20	U	23	U	21	U	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U	22	U	20	U	23	U	21	U	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG																			
Location				UNK-033		UNK-034				AA07MW-02		BSMW3S		BW06006					
Sample Date				6/11/2024		6/11/2024				6/25/2024		6/18/2024		6/13/2024		6/13/			
Sample ID				LORNG_UNK-033_06112024		LORNG_UNK-034_80_06112024		LORNG_UNK-034_180_06112024		LORNG_UNK-034_280_06112024		LORNG_AA07MW-02_06252024		LORNG_AA07MW-02_06252024FD		LORNG_BSMW3S_06182024		LORNG_BW06006_06132024		LORNG_EB028_06132024	
QC Code				N		N		N		N		N		FD		N		N		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	4	U	4.4	U	4.1	U	4.5	U	4.2	U	3.7	U	3.7	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	2.2	U	2	U	2.3	U	2.1	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	10	U	11	U	10	U	11	U	10	U	9.3	U	9.3	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	22	U	20	U	23	U	21	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	22	U	20	U	23	U	21	U	19	U	19	U	19	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				FC16855																			
Location				FIELDQC				FMW3410		JBW7338B		JBW7339A		JBW7339B		JBW8003B		JEBS-4		JMW0010			
Sample Date				2024		6/21/2024		6/13/2024		6/21/2024		6/13/2024		6/13/2024		6/18/2024		6/21/2024		6/13/2024			
Sample ID				LORNG_EB029_06132024		LORNG_EB030_06212024		LORNG_FMW3410_06132024		LORNG_JBW7338B_06212024		LORNG_JBW7339A_06132024		LORNG_JBW7339B_06132024		LORNG_JBW8003B_06182024		LORNG_JEBS-4_06212024		LORNG_JMW0010_06132024			
QC Code				EB		EB		N		N		N		N		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.8	U	15.1		9.4	J	19.9		15		24.6		7.6	J	3.8	U		
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	42.3		6	J	63.5		44.8		62.5		2.2	J	1.9	U		
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	29.3		7.2		90.6		57.6		158		2	J	1.9	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	24.4		4.2		29.7		22.2		51.2		2.7	J	1.9	U		
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	0.94	U	14.3		6		84.8		66.9		143		4.8		0.94	U		
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.8	J	0.76	J	3	J	3.1	J	13.7		2.2	J	1.9	U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	0.98	J	1.9	U	1.9	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	3.3	J	3.2	J	12.6		7.4		19.1		0.94	J	1.9	U		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.8	U	4.3	J	3.4	J	16.8		10.7		26.5		3.8	U	3.8	U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	45.7		31.7		382		206		750		14.9		1.9	U		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.6	J	0.65	J	7.6		5.3		12.1		1.9	U	1.9	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	60.6		20.9		242		164		900		17.7		1.9	U		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	0.63	J	1.8	U	2.2	J	1.9	U	1.9	U		
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.5	U	7.7	U	7.3	U	7.4	U	7.3	U	7.5	U	7.5	U	7.5	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.5	U	7.7	U	7.3	U	44.1		36.4		20.8		7.5	U	7.5	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.5	U	7.7	U	7.3	U	7.4	U	7.3	U	19.6		7.5	U	7.5	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	11.7	J	8.1	J	13.3		1.9	U	1.9	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U		
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U		

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				FC16855															
Location				FIELDQC				FMW3410		JBW7338B		JBW7339A		JBW7339B		JBW8003B		JEBS-4		JMW0010	
Sample Date				2024		6/21/2024		6/13/2024		6/21/2024		6/13/2024		6/13/2024		6/18/2024		6/21/2024		6/13/2024	
Sample ID				LORNG_EB029_06132024		LORNG_EB030_06212024		LORNG_FMW3410_06132024		LORNG_JBW7338B_06212024		LORNG_JBW7339A_06132024		LORNG_JBW7339B_06132024		LORNG_JBW8003B_06182024		LORNG_JEBS-4_06212024		LORNG_JMW0010_06132024	
QC Code				EB		EB		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.8	U	3.8	U	3.6	U	3.7	U	3.6	U	3.8	U	3.8	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.4	U	9.6	U	9.1	U	9.3	U	9.1	U	9.4	U	9.4	U	9.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG				FC16855																					
Location				JMW2680		JPZ7601		JPZ7602		LYS01007D		LYS01007S				LYS05012D		LYS05012S		LYS07007D					
Sample Date				6/12/2024		6/13/2024		6/13/2024		6/19/2024		6/19/2024				6/19/2024		6/19/2024		6/19/2024					
Sample ID				LORNG_JMW2680_06122024		LORNG_JPZ7601_06132024		LORNG_JPZ7602_06132024		LORNG_LYS01007D_06192024		LORNG_LYS01007S_06192024		LORNG_LYS07007S_06192024		LORNG_LYS05012D_06192024		LORNG_LYS05012S_06192024		LORNG_LYS07007D_06192024					
QC Code				N		N		N		N		N		N		N		N		N					
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier				
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	3.3	J	11.7	J	185		155		1820		603		84.4	J	1370					
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	2.7	J	26.6		591		361		7090		1910		277		6940					
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	2.5	J	39.4		1420		885		4930		3160		324		6360					
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	2.3	J	10.6		548		280		2300		1060		562		3960					
		Perfluorooctanoic acid (PFOA)	NG/L	0.71	J	2.9	J	13.5		1470		852		3100		1560		419		11700					
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	0.82	J	1.9	U	150		136		930		51.5		16.2	J	419					
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	7	J	18	J	16.3	J	17	U	17	U	5.7	J				
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	0.67	J	16.6		159		145		1720		1030		42.1		4130					
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	3.8	U	19.3		339		258		2840		1470		61.2		8370					
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	3.3	J	5.6		109		11400		6970		19100		10900		510		55400					
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	6.3		233		198		1380		331		18.5	J	2220					
		Perfluorooctanesulfonic acid (PFOS)	NG/L	2.6	J	8.1		201		7920		19700		120000		878		4040		49200					
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	10	J	67.8	J	50	U	17	U	54.9	J	17	U				
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.7	U	7.5	U	67	U	67	U	85.3	J	35.4	J	67	U	295					
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.7	U	4.5	J	67	U	67	U	5520		2510		67	U	32100					
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.7	U	7.5	U	67	U	67	U	200	U	67	U	202		67	U				
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	0.64	J	19.5	J	122	J	50	U	8.2	J	236		17	U				
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	19	U	170	U	170	U	500	U	170	U	170	U	170	U				
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	19	U	170	U	170	U	500	U	170	U	170	U	170	U				
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U				
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U				

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

		SDG		FC16855																	
		Location		JMW2680		JPZ7601		JPZ7602		LYS01007D		LYS01007S				LYS05012D		LYS05012S		LYS07007D	
		Sample Date		6/12/2024		6/13/2024		6/13/2024		6/19/2024		6/19/2024				6/19/2024		6/19/2024		6/19/2024	
		Sample ID		LORNG_JMW2680_06122024		LORNG_JPZ7601_06132024		LORNG_JPZ7602_06132024		LORNG_LYS01007D_06192024		LORNG_LYS01007S_06192024		LORNG_LYS07007S_06192024		LORNG_LYS05012D_06192024		LORNG_LYS05012S_06192024		LORNG_LYS07007D_06192024	
		QC Code		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U	3.8	U	33	U	33	U	100	U	33	U	33	U	33	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U	17	U	17	U	50	U	17	U	17	U	17	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.6	U	9.4	U	83	U	83	U	250	U	83	U	83	U	83	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U	170	U	170	U	500	U	170	U	170	U	170	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U	170	U	170	U	500	U	170	U	170	U	170	U

Notes:

N = Normal Field Sample

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FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

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Date: 9/3/24
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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC16855								
			Location	LYS07007DDUP	LYS07007SDUP	MMW0531	MMW8015	OW01002	OW07001	SB/OW12001	UNK-026	USMW012
			Sample Date	6/19/2024	6/19/2024	6/13/2024	6/18/2024	6/14/2024	6/24/2024	6/14/2024	6/12/2024	6/18/2024
			Sample ID	LORNG_LYS07007DDUP_06192024	LORNG_LYS07007SDUP_06192024	LORNG_MMW0531_06132024	LORNG_MMW8015_06182024	LORNG_OW01002_06142024	LORNG_OW07001_06242024	LORNG_SB/OW12001_06142024	LORNG_LORNG-UNK-026_06122024	LORNG_USMW012_06182024
			QC Code	N	N	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	1290	1020	7.4 J	52.8	94.7 J	21.1	19.1	7.7 J	3.9 U
		Perfluoropentanoic acid (PFPeA)	NG/L	6150	4160	14.9	152	260	50.1	44.2	19.9	2 U
		Perfluorohexanoic acid (PFHxA)	NG/L	5030	2900	10.4	353	865	37.1	70.2	35.1	2 U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2820	1580	8	101	175	27.7	28.4	13.4	2 U
		Perfluorooctanoic acid (PFOA)	NG/L	7070	1770	5.7	320	620	31	37.2	38.2	1.1 J
		Perfluorononanoic acid (PFNA)	NG/L	603	569	1.2 J	18.9	62.8	6.9	4.2	1.3 J	2 U
		Perfluorodecanoic acid (PFDA)	NG/L	9.3 J	13.7 J	2 U	1.5 J	5.7 J	1.9 U	1.9 U	1.8 U	2 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluorododecanoic acid (PFDoA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2280	903	1 J	38.5	75.3	8.4	32.6	6.9	2 U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4410	1650	3.9 U	60.5	101	12	59	8.1	3.9 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	64300	12900	11.8	1400	4000	115	397	170	0.72 J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	4530	1210	2 U	32.6	75.4	4.3	26.3	3.9	2 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	57500	82700	12.4	1710	6120	126	1110	140	1.8 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	17 U	50 U	2 U	3.3 J	16.5 J	1.9 U	1.9 U	1.8 U	2 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	205 J	85 J	7.8 U	8 U	67 U	7.4 U	7.5 U	7.3 U	7.8 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	21000	6460	7.8 U	136	192	7.4 U	27.9	7.3 U	7.8 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	96.7 J	200 U	7.8 U	29.7	115 J	7.4 U	7.5 U	7.3 U	7.8 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	17 U	50 U	0.88 J	29.6	126 J	1.9 U	1.9 U	1.8 U	2 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	170 U	500 U	20 U	20 U	170 U	19 U	19 U	18 U	20 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	170 U	500 U	20 U	20 U	170 U	19 U	19 U	18 U	20 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	17 U	50 U	2 U	2 U	17 U	1.9 U	1.9 U	1.8 U	2 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	33 U	100 U	3.9 U	4 U	33 U	3.7 U	3.8 U	3.6 U	3.9 U

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Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG	FC16855																	
			Location	LYS07007DDUP		LYS07007SDUP		MMW0531		MMW8015		OW01002		OW07001		SB/OW12001		UNK-026		USMW012	
			Sample Date	6/19/2024		6/19/2024		6/13/2024		6/18/2024		6/14/2024		6/24/2024		6/14/2024		6/12/2024		6/18/2024	
			Sample ID	LORNG_LYS07007DDUP_06192024		LORNG_LYS07007SDUP_06192024		LORNG_MMW0531_06132024		LORNG_MMW8015_06182024		LORNG_OW01002_06142024		LORNG_OW07001_06242024		LORNG_SB/OW12001_06142024		LORNG_LORNG-UNK-026_06122024		LORNG_USMW012_06182024	
			QC Code	N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	33	U	100	U	3.9	U	4	U	33	U	3.7	U	3.8	U	3.6	U	3.9	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	33	U	100	U	3.9	U	4	U	33	U	3.7	U	3.8	U	3.6	U	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	17	U	50	U	2	U	2	U	17	U	1.9	U	1.9	U	1.8	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	83	U	250	U	9.8	U	10	U	83	U	9.3	U	9.4	U	9.1	U	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	170	U	500	U	20	U	20	U	170	U	19	U	19	U	18	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	170	U	500	U	20	U	20	U	170	U	19	U	19	U	18	U	20	U

Notes:

N = Normal Field Sample

EB = Equipment Rinse Blank

FD = Field Duplicate

J = Concentration is estimated

J+ = Concentration is estimated; potential high bias

J- = Concentration is estimated; potential low bias

R = Data are unusable

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/3/24
Checked by:MLB
Date:9/10/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG		
			Location	USMW210	
			Sample Date	6/14/2024	
			Sample ID	LORNG_USMW210_06142024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6.9	J
		Perfluoropentanoic acid (PFPeA)	NG/L	13.5	
		Perfluorohexanoic acid (PFHxA)	NG/L	26.8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.8	
		Perfluorooctanoic acid (PFOA)	NG/L	35.3	
		Perfluorononanoic acid (PFNA)	NG/L	3.5	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.5	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	6.5	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	148	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3.7	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	217	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	3.9	J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U

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Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

			SDG		
			Location	USMW210	
			Sample Date	6/14/2024	
			Sample ID	LORNG_USMW210_06142024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U

Notes:

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NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-36	LORNG_BW05008_05142024	Perfluorobutanoic acid (PFBA)	3.8	J	3.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.9	J	5.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.8	J	1.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-41	LORNG_BW05011D_05142024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15756-37	LORNG_BW05011S_05152024	Perfluorohexanoic acid (PFHxA)	0.48	J	0.48	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2	J	2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.3	J	3.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15756-38	LORNG_BW10007_05152024	Perfluorohexanoic acid (PFHxA)	0.49	J	0.49	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.61	J	0.61	J	IAG, TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.49	J	0.49	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.7	J	2.7	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.7	J	2.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-8	LORNG_EBGB_BW002_05132024	Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.59	J	0.59	J	IAG, TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.7	J	1.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-39	LORNG_GC_BW002D_05152024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15756-48	LORNG_JBW7203B_05102024	Perfluorobutanoic acid (PFBA)	6.2	J	6.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.78	J	0.78	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.97	J	0.97	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-49	LORNG_JBW7326A_05142024	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15756-50	LORNG_JBW7326B_05142024	Perfluorobutanoic acid (PFBA)	5	J	5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.63	J	0.63	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.2	J	3.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-29	LORNG_JBW7345B_05152024	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.9	J	5.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3	J	3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.77	J	0.77	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15756-2	LORNG_JBW7347B_05132024	Perfluorobutanoic acid (PFBA)	4.9	J	4.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	J	2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3	J	3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.87	J	0.87	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15756-3	LORNG_JBW7347B_05132024FD	Perfluorobutanoic acid (PFBA)	4.6	J	4.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.85	J	0.85	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-30	LORNG_JBW7614_05152024	Perfluorobutanoic acid (PFBA)	3	J	3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.1	J	2.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-4	LORNG_JBW8009_05102024	Perfluorobutanoic acid (PFBA)	7.4	J	7.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.8	J	1.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-9	LORNG_JMW-0416B_05132024	Perfluorobutanoic acid (PFBA)	3.7	J	3.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.1	J	5.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.1	J	2.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.61	J	0.61	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1	J	1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.5	J	3.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-10	LORNG_JMW-0505_05132024	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.8	J	3.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-25	LORNG_JMW-0602_05152024	Perfluoropentanoic acid (PFPeA)	3.6	J	3.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.5	J	2.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3	J	3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	J	1.8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.89	J	0.89	J	IAG, TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-26	LORNG_JMW-0602_05152024FD	Perfluoropentanoic acid (PFPeA)	3.3	J	3.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.7	J	2.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.1	J	3.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.7	J	1.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.95	J	0.95	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15756-42	LORNG_JMW-0603_05142024	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.71	J	0.71	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.81	J	0.81	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-31	LORNG_JMW0682_05152024	Perfluorobutanoic acid (PFBA)	3.4	J	3.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.1	J	2.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L

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Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-43	LORNG_JMW-0806_05142024	Perfluorobutanoic acid (PFBA)	2.1	J	2.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.75	J	0.75	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.2	J	2.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-11	LORNG_JMW0982_05132024	Perfluorobutanoic acid (PFBA)	3.7	J	3.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.6	J	1.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.2	J	3.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	J	1.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.71	J	0.71	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.71	J	0.71	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.7	J	2.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.8	J	1.8	J	TR	NG/L
			FC15756-12	LORNG_JMW0982_05132024FD	Perfluorobutanoic acid (PFBA)	3.1	J	3.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	J	1.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.3	J	2.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.82	J	0.82	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.49	J	0.49	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.55	J	0.55	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4	J	2.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.9	J	1.9	J	TR	NG/L

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Checked by:MLB
Date:9/10/2024

Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-44	LORNG_JMW1762_05152024	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5	J	5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	4.8	=	4.8	J	IAG	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.3	J	3.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3	J	2.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.9	J	0.9	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-5	LORNG_JMW3501_05132024	Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.91	J	0.91	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.52	J	0.52	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1	J	1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.7	J	2.7	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	CVHL	NG/L
			FC15756-32	LORNG_JMW3601_05152024	Perfluorobutanoic acid (PFBA)	2.4	J	2.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.9	J	1.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.76	J	0.76	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-17	LORNG_JMW6001_05142024	Perfluorobutanoic acid (PFBA)	12.1	J	12.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.9	J	6.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.91	J	0.91	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6.1	J	6.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.2	U	4.2	UJ	IVD	NG/L
			FC15756-18	LORNG_JMW6001_05142024FD	Perfluorobutanoic acid (PFBA)	12.1	J	12.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	8.4	J	8.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.2	J	2.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.98	J	0.98	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	5.9	J	5.9	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.4	U	4.4	UJ	IVD	NG/L
			FC15756-33	LORNG_LF2MW2_05152024	Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.69	J	0.69	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.2	J	3.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-13	LORNG_MMW0009_05132024	Perfluorobutanoic acid (PFBA)	1.8	J	1.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.82	J	0.82	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.54	J	0.54	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.1	J	2.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-19	LORNG_MMW0132_05142024	Perfluorobutanoic acid (PFBA)	6.1	J	6.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.54	J	0.54	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4.3	U	4.3	UJ	IVD	NG/L
			FC15756-45	LORNG_MMW0422_05132024	Perfluorobutanoic acid (PFBA)	2.4	J	2.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.9	J	2.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.2	J	1.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-46	LORNG_NP_OW001_05152024	Perfluorooctanesulfonic acid (PFOS)	0.65	J	0.65	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-20	LORNG_OW02002_05142024	Perfluorobutanoic acid (PFBA)	2.3	J	2.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1	J	1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.61	J	0.61	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-40	LORNG_OW10007_05152024	Perfluorobutanoic acid (PFBA)	4	J	4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4	J	4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.7	J	0.7	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.7	J	2.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-34	LORNG_OW20001_05102024	Perfluorobutanoic acid (PFBA)	3.1	J	3.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.5	J	2.5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2	J	2	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15756-27	LORNG_OW20003_05152024	Perfluorobutanoic acid (PFBA)	3.9	J	3.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T	FC15756-27	LORNG_OW20003_05152024	Perfluoropentanesulfonic acid (PFPeS)	2.3	J	2.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.2	J	2.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15756-6	LORNG_OW20004_05102024	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.62	J	0.62	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.6	J	2.6	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-7	LORNG_OW20004_05102024FD	Perfluorobutanesulfonic acid (PFBS)	0.63	J	0.63	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2	J	2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-14	LORNG_OW20005_05102024	Perfluorobutanoic acid (PFBA)	5	J	5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6	J	4.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.5	J	3.5	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.6	J	2.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.82	J	0.82	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-28	LORNG_OW24001_05152024	Perfluorobutanoic acid (PFBA)	5.7	J	5.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.1	J	3.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.52	J	0.52	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-47	LORNG_UNK-036_05142024	Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.8	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15756	E1633DR	T			N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-21	LORNG_USMW013_05142024	Perfluorohexanoic acid (PFHxA)	0.89	J	0.89	J	IAG, TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.5	J	3.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15756-35	LORNG_USMW019_05152024	Perfluorooctanoic acid (PFOA)	1	J	1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.5	J	2.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
FC16453	E1633DR	T	FC16453-8	LORNG_8711-MW07_06122024	Perfluorobutanoic acid (PFBA)	9.7	J	9.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.5	J	1.5	J	TR	NG/L
			FC16453-20	LORNG_AA07MW-01_06112024	Perfluoroundecanoic acid (PFUnA)	3.2	J	3.2	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	18.5	=	18.5	J	IAG	NG/L
					Perfluorodecanesulfonic acid (PFDS)	3.7	J	3.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	16.5	J	16.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	205	=	205	J	IAG	NG/L
			FC16453-15	LORNG_AA20MW-02_06112024	Perfluorobutanoic acid (PFBA)	11.7	J	11.7	J	TR	NG/L
			FC16453-16	LORNG_AA20MW-02_06112024FD	Perfluorobutanoic acid (PFBA)	12.2	J	12.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L
			FC16453-21	LORNG_BW01007_06102024	Perfluorononanesulfonic acid (PFNS)	0.85	J	0.85	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.1	=	4.1	J	IAG	NG/L
			FC16453-9	LORNG_BW01008_06122024	Perfluorobutanoic acid (PFBA)	4.8	J	4.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.73	J	0.73	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.3	J	2.3	J	TR	NG/L
			FC16453-10	LORNG_BW01008_06122024FD	Perfluorobutanoic acid (PFBA)	4.6	J	4.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.72	J	0.72	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.1	J	2.1	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16453	E1633DR	T	FC16453-22	LORNG_BW05007_06102024	Perfluorononanesulfonic acid (PFNS)	0.79	J	0.79	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.84	J	0.84	J	TR	NG/L
			FC16453-1	LORNG_BW06006_06112024HS	Perfluorobutanoic acid (PFBA)	31.3	J	31.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	12.7	J	12.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.4	J	7.4	J	TR	NG/L
			FC16453-23	LORNG_BW07003_06112024	Perfluorodecanoic acid (PFDA)	1.5	J	1.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	5.6	J	5.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.8	=	3.8	J	IAG	NG/L
			FC16453-2	LORNG_BW12005_06102024	Perfluorononanoic acid (PFNA)	1.5	J	1.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	4.1	J	4.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.6	J	3.6	J	IAG, TR	NG/L
			FC16453-13	LORNG_JBW7711_06122024	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	J	1.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.1	J	2.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.4	J	2.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.2	J	4.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.2	J	2.2	J	TR	NG/L
			FC16453-3	LORNG_JBW7742A_06112024	Perfluoropentanoic acid (PFPeA)	6.6	J	6.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	4	J	4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.2	J	3.2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	5	J	5	J	TR	NG/L

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Date:9/3/24
Checked by:MLB
Date:9/10/2024

Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16453	E1633DR	T	FC16453-17	LORNG_JBW8004B_06112024	Perfluorodecanoic acid (PFDA)	1.5	J	1.5	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	4.4	=	4.4	J	IAG	NG/L
			FC16453-14	LORNG_JMW0301C_06122024	Perfluorobutanoic acid (PFBA)	9.6	J	9.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3.4	J	3.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	5.3	J	5.3	J	TR	NG/L
			FC16453-18	LORNG_JMW8011_06112024	Perfluorodecanoic acid (PFDA)	2	J	2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	70.5	=	70.5	J-	MSL	NG/L
			FC16453-24	LORNG_OW01004_06102024	Perfluorodecanoic acid (PFDA)	0.73	J	0.73	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	2.4	J	2.4	J	IAG, TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.72	J	0.72	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	14.7	=	14.7	J	IAG	NG/L
			FC16453-25	LORNG_OW07003_06112024	Perfluorodecanoic acid (PFDA)	1.4	J	1.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	8	J	8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.2	=	4.2	J	IAG	NG/L
			FC16453-26	LORNG_RFW1145_35_06112024	Perfluorodecanoic acid (PFDA)	2.6	J	2.6	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.6	J	1.6	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	30.3	=	30.3	J	IAG	NG/L
			FC16453-19	LORNG_RFW1145_75_06112024	Perfluorodecanoic acid (PFDA)	0.76	J	0.76	J	IAG, TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.7	J	0.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	18.1	J	18.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	9.6	=	9.6	J	IAG	NG/L
			FC16453-4	LORNG_UNK-033_06112024	Perfluorobutanoic acid (PFBA)	10.7	J	10.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	3.4	J	3.4	J	TR	NG/L

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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16453	E1633DR	T	FC16453-5	LORNG_UNK-034_180_06112024	Perfluorohexanoic acid (PFHxA)	0.71	J	0.71	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.9	J	1.9	J	TR	NG/L
			FC16453-6	LORNG_UNK-034_280_06112024	Perfluorohexanoic acid (PFHxA)	0.63	J	0.63	J	IAG, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J	TR	NG/L
			FC16453-7	LORNG_UNK-034_80_06112024	Perfluorohexanoic acid (PFHxA)	0.81	J	0.81	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.89	J	0.89	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.58	J	0.58	J	IAG, TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.5	J	2.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	5.8	J	5.8	J	TR	NG/L
FC16855	E1633DR	T	FC16855-11	LORNG_AA07MW-02_06252024	Perfluorodecanoic acid (PFDA)	0.81	J	0.81	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	2.3	J	2.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	17.3	J	17.3	J	TR	NG/L
			FC16855-12	LORNG_AA07MW-02_06252024FD	Perfluorodecanoic acid (PFDA)	1	J	1	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.7	J	1.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	20.3	J	20.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	32.7	=	32.7	J	IAG	NG/L
			FC16855-8	LORNG_BSMW3S_06182024	Perfluorodecanoic acid (PFDA)	0.67	J	0.67	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3.6	J	3.6	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.59	J	0.59	J	IAG, TR	NG/L
			FC16855-17	LORNG_BW06006_06132024	Perfluorodecanoic acid (PFDA)	0.52	J	0.52	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.5	J	1.5	J	TR	NG/L

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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16855	E1633DR	T	FC16855-18	LORNG_FMW3410_06132024	Perfluorononanoic acid (PFNA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.3	J	3.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.3	J	4.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	J	TR	NG/L
			FC16855-24	LORNG_JBW7338B_06212024	Perfluorobutanoic acid (PFBA)	9.4	J	9.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6	J	6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.76	J	0.76	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.4	J	3.4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.65	J	0.65	J	TR	NG/L
			FC16855-3	LORNG_JBW7339A_06132024	Perfluorononanoic acid (PFNA)	3	J	3	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.63	J	0.63	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	11.7	=	11.7	J	IAG	NG/L
			FC16855-19	LORNG_JBW7339B_06132024	Perfluorononanoic acid (PFNA)	3.1	J	3.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.1	=	8.1	J	IAG	NG/L
			FC16855-9	LORNG_JBW8003B_06182024	Perfluorodecanoic acid (PFDA)	0.98	J	0.98	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	2.2	J	2.2	J	IAG, TR	NG/L
			FC16855-25	LORNG_JEBS-4_06212024	Perfluorobutanoic acid (PFBA)	7.6	J	7.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2	J	2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.7	J	2.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.2	J	2.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.94	J	0.94	J	TR	NG/L
			FC16855-21	LORNG_JMW2680_06122024	Perfluorooctanoic acid (PFOA)	0.71	J	0.71	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.3	J	3.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.6	J	2.6	J	TR	NG/L

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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16855	E1633DR	T	FC16855-4	LORNG_JPZ7601_06132024	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.9	J	2.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.82	J	0.82	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.67	J	0.67	J	TR	NG/L
			FC16855-5	LORNG_JPZ7602_06132024	Perfluorobutanoic acid (PFBA)	11.7	J	11.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.5	J	4.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.64	J	0.64	J	IAG, TR	NG/L
			FC16855-22	LORNG_LORNG-UNK-026_06122024	Perfluorobutanoic acid (PFBA)	7.7	J	7.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
			FC16855-14	LORNG_LYS01007D_06192024	Perfluorodecanoic acid (PFDA)	7	J	7	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	10	J	10	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	19.5	J	19.5	J	IAG, TR	NG/L
			FC16855-26	LORNG_LYS01007S_06192024	Perfluorodecanoic acid (PFDA)	18	J	18	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	67.8	=	67.8	J	IAG	NG/L
					Perfluorooctane sulfonamide (PFOSA)	122	=	122	J	IAG	NG/L
			FC16855-27	LORNG_LYS05012D_06192024	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	35.4	J	35.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.2	J	8.2	J	IAG, TR	NG/L
			FC16855-28	LORNG_LYS05012S_06192024	Perfluorobutanoic acid (PFBA)	84.4	J	84.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	16.2	J	16.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	18.5	J	18.5	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	54.9	=	54.9	J	IAG	NG/L
			FC16855-29	LORNG_LYS07007D_06192024	Perfluorodecanoic acid (PFDA)	5.7	J	5.7	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	9.3	J	9.3	J	TR	NG/L

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Checked by:MLB
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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16855	E1633DR	T	FC16855-30	LORNG_LYS07007DDUP_06192024	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	205	=	205	J	EISH	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	96.7	J	96.7	J	TR	NG/L
			FC16855-15	LORNG_LYS07007S_06192024	Perfluorodecanoic acid (PFDA)	16.3	J	16.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	85.3	J	85.3	J	TR	NG/L
			FC16855-31	LORNG_LYS07007SDUP_06192024	Perfluorodecanoic acid (PFDA)	13.7	J	13.7	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	85	J	85	J	TR	NG/L
			FC16855-23	LORNG_MMW0531_06132024	Perfluorobutanoic acid (PFBA)	7.4	J	7.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.88	J	0.88	J	TR	NG/L
			FC16855-32	LORNG_MMW8015_06182024	Perfluorodecanoic acid (PFDA)	1.5	J	1.5	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	3.3	J	3.3	J	TR	NG/L
			FC16855-6	LORNG_OW01002_06142024	Perfluorobutanoic acid (PFBA)	94.7	J	94.7	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	5.7	J	5.7	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	16.5	J	16.5	J	IAG, TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	115	J	115	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	126	=	126	J	IAG	NG/L
			FC16855-33	LORNG_USMW012_06182024	Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.72	J	0.72	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.8	J	1.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC16855-7	LORNG_USMW021_06142024	Perfluorobutanoic acid (PFBA)	6.9	J	6.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	3.5	J	3.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.9	J	3.9	J	TR	NG/L

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Date:9/10/2024

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Table 3 - Data Qualifications Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater - FC15756, FC16453, FC16855

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

J- = Analyte is estimated; potential low bias

J+ = Analyte is estimated; potential high bias

R = Date are unusable

UJ = Analyte not detected; reporting limits estimated

NJ = Analyte has been tentatively identified and concentration is estimated

CVHL = High ISC or CCV recovery.

EISL = Low extracted internal standard recovery

IAG = Transition ion ratio outside limits

IVD = ICV recovery is outside of limits.

MSL = Matrix spike recovery low

NG/L = nanograms per liter

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:9/3/24
Checked by:MLB
Date:9/10/2024

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15756	LORNG_JBW7347B_05132024	LORNG_JBW7347B_05132024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.9	J	4.6	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	10.4		10		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	10.6		10.3		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.9		4.9		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.7		8.8		1	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	J	1.9	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3	J	2.4	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	42.4		41.8		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.87	J	0.85	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	17		16.5		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.2	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.4	U	7.2	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	UJ	3.6	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	

Prepared by: AKN 9/3/24
Checked by: MLB 9/10/2024

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
FC15756	LORNG_JMW-0602_05152024	LORNG_JMW-0602_05152024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.9	U	4	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	3.6	J	3.3	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.8		9.1		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.5	J	2.7	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	13.4		13.6		1	
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1	J	2.1	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3	J	3.1	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	49.4		51.5		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.7	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	57.1		56.5		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.8	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.89	J	0.95	J	NC	IAG, TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	UJ	4	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.8	U	10	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC15756	LORNG_JMW0982_05132024	LORNG_JMW0982_05132024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.7	J	3.1	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.6	J	1.8	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	3.2	J	3.5	J	NC	TR
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	J	2.3	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	5.5		5.5		0	
				Perfluorononanoic acid (PFNA) (NG/L)	0.71	J	0.82	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	0.49	J	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	9.2		9.5		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.71	J	0.55	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	29.1		29.6		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.7	J	2.4	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	UJ	3.6	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	8.3		6.2		29	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	1.8	J	1.9	J	NC	TR
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	
FC15756	LORNG_JMW6001_05142024	LORNG_JMW6001_05142024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12.1	J	12.1	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	6.9	J	8.4	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	8		9		12	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	6		6.2		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	7.9		8.5		7	
				Perfluorononanoic acid (PFNA) (NG/L)	1.7	J	1.3	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	1.8	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.8	J	2.2	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	32.8		33.2		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	0.91	J	0.98	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	36.7		34.9		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.1	U	2.2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.2	U	4.4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8.3	U	8.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	6.1	J	5.9	J	NC	TR
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8.3	U	8.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.1	U	2.2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.2	U	4.4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.2	UJ	4.4	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.2	U	4.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.2	U	4.4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	21	U	22	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	21	U	22	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.1	U	2.2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.2	U	4.4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.2	U	4.4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.2	U	4.4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.2	U	4.4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.2	U	4.4	U	NC	

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Checked by: MLB 9/10/2024

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.1	U	2.2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	11	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	21	U	22	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	21	U	22	U	NC	
FC15756	LORNG_OW20004_05102024	LORNG_OW20004_05102024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	1.7	J	3.6	U	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.91	U	0.91	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.62	J	0.63	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	5.8		5.7		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.6	J	2	J	NC	TR
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	UJ	3.6	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	
FC16453	LORNG_AA20MW-02_06112024	LORNG_AA20MW-02_06112024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	11.7	J	12.2	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	20		20.9		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	81.8		80.8		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	16.9		17.1		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	31		29.6		5	
				Perfluorononanoic acid (PFNA) (NG/L)	2.1	U	0.8	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	99.8		100		0	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	131		137		4	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	691		751		8	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	20.2		20.7		2	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	326		343		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.1	U	2.1	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.1	U	4.1	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8.2	U	8.2	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8.2	U	8.2	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8.2	U	8.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.1	U	2.1	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.1	U	4.1	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.1	U	4.1	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.1	U	4.1	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.1	U	4.1	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	21	U	21	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	21	U	21	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.1	U	2.1	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.1	U	4.1	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	2.1	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.1	U	4.1	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.1	U	4.1	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.1	U	4.1	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.1	U	4.1	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.1	U	2.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	21	U	21	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	21	U	21	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.8	J	4.6	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	10.5		10.1		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	17.9		17		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	5.9		5.3		11	
				Perfluorooctanoic acid (PFOA) (NG/L)	24.6		23.2		6	
				Perfluorononanoic acid (PFNA) (NG/L)	0.73	J	0.72	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	4.3		4.1		5	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	7.2		6.5		10	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	140		138		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.3	J	2.1	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	57.1		55.7		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	4	U	NC	
FC16453	LORNG_BW01008_06122024	LORNG_BW01008_06122024FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.8	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.8	U	7.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	4	U	NC	

Prepared by: AKN 9/3/24
Checked by: MLB 9/10/2024

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	4	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.8	U	9.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC16855	LORNG_AA07MW-02_06252024	LORNG_AA07MW-02_06252024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	69		69.2		0	
				Perfluoropentanoic acid (PFPeA) (NG/L)	276		286		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	330		340		3	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	113		115		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	362		347		4	
				Perfluorononanoic acid (PFNA) (NG/L)	12.9		13.3		3	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.81	J	1	J	NC	TR
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.3	U	2.1	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2.3	U	2.1	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.3	U	2.1	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.3	U	2.1	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	59.5		60.6		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	94.6		96.9		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1070		1090		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	39.2		39.7		1	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1230		1100		11	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.3	J	1.7	J	NC	TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.3	U	2.1	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.5	U	4.2	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	17.3	J	20.3	J	NC	TR
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	894		877		2	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	54.9		54.8		0	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	35.2		32.7	J	7	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.5	U	4.2	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.5	U	4.2	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.5	U	4.2	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.5	U	4.2	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	23	U	21	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	23	U	21	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.3	U	2.1	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.5	U	4.2	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.3	U	2.1	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - FC15756, FC16453, FC16855

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.5	U	4.2	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.5	U	4.2	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.5	U	4.2	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.5	U	4.2	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.3	U	2.1	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	11	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	23	U	21	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	23	U	21	U	NC	

Table 1 - Split Sample Comparison Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

Sample	Analyte	Primary LOQ	Split LOQ	Primary Result		Split Result		RPD
LORNG_BW10007_05152024	Perfluorobutanoic acid	15	5.9	3.7	U	1	J	NC
	Perfluoropentanoic acid	7.4	3	1.9	U	0.39	J	NC
	Perfluorohexanoic acid	3.7	1.5	0.49	J	0.51	J	4%
	Perfluoroheptanoic acid	3.7	1.5	0.61	J	0.62	J	2%
	Perfluorooctanoic acid	3.7	1.5	1.3	J	1	J	26%
	Perfluorononanoic acid	3.7	1.5	1.1	J	1.1	J	0%
	Perfluorodecanoic acid	3.7	1.5	1.9	U	0.93	U	NC
	Perfluoroundecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorododecanoic acid	3.7	1.5	1.9	U	0.93	U	NC
	Perfluorotridecanoic acid	3.7	1.5	1.9	U	0.93	U	NC
	Perfluorotetradecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorobutanesulfonic acid	3.7	1.3	0.49	J	0.55	J	12%
	Perfluoropentanesulfonic acid	4.6	1.4	3.7	U	0.16	J	NC
	Perfluorohexanesulfonic acid	3.7	1.4	2.7	J	2.4		12%
	Perfluoroheptanesulfonic acid	3.7	1.4	1.9	U	0.44	U	NC
	Perfluorooctanesulfonic acid	3.7	1.4	2.7	J	2.4		12%
	Perfluorononanesulfonic acid	3.7	1.4	1.9	U	0.87	U	NC
	Perfluorodecanesulfonic acid	3.7	1.4	1.9	U	0.44	U	NC
	Perfluorododecanesulfonic acid	4.6	1.5	3.7	U	0.93	U	NC
	4:2-FTS	19	5.6	7.4	U	1.8	U	NC
	6:2-FTS	19	5.6	7.4	U	1.8	U	NC
	8:2-FTS	19	5.6	7.4	U	3.5	U	NC
	PFOSA	3.7	1.5	1.9	U	0.23	U	NC
	MeFOSA	7.4	1.5	3.7	U	0.93	U	NC
	EtFOSA	7.4	1.5	3.7	U	0.93	U	NC
	MeFOSAA	4.6	1.5	3.7	U	0.93	U	NC
	EtFOSAA	4.6	1.5	3.7	U	0.93	U	NC
	MeFOSE	37	15	19	U	2.3	U	NC
	EtFOSE	37	15	19	U	4.6	U	NC
	HFPO-DA (GenX)	3.7	5.9	1.9	U	3.7	U	NC
	ADONA	7.4	5.6	3.7	U	3.5	U	NC
	PFMPA	7.4	3	1.9	U	1.9	U	NC
	PFMBA	7.4	3	3.7	U	0.46	U	NC
	NFDHA	7.4	65	3.7	U	56	U	NC
	9Cl-PF3ONS (F-53B Major)	7.4	11	3.7	U	6.1	U	NC
	11Cl-PF3OUdS (F-53B Minor)	7.4	11	3.7	U	6.1	U	NC
	PFEESA	7.4	5.2	1.9	U	2.9	U	NC
	3:3-FTCA	19	15	9.3	U	8.1	U	NC

prepared by MB
reviewed by CR
11/1/2024

Table 1 - Split Sample Comparison Summary
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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

	5:3-FTCA	93	37	19	U	29	U	NC
	7:3-FTCA	93	37	19	U	29	U	NC
LORNG_JBW7326A_05142024	Perfluorobutanoic acid	15	5.8	5.2	J	4.8	J	8%
	Perfluoropentanoic acid	7.4	2.9	8.5		8.5		0%
	Perfluorohexanoic acid	3.7	1.5	7.2		6.7		7%
	Perfluoroheptanoic acid	3.7	1.5	4.4		4		10%
	Perfluorooctanoic acid	3.7	1.5	5.4		5.4		0%
	Perfluorononanoic acid	3.7	1.5	1.9	U	0.45	J	NC
	Perfluorodecanoic acid	3.7	1.5	1.9	U	0.91	U	NC
	Perfluoroundecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorododecanoic acid	3.7	1.5	1.9	U	0.91	U	NC
	Perfluorotridecanoic acid	3.7	1.5	1.9	U	0.91	U	NC
	Perfluorotetradecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorobutanesulfonic acid	3.7	1.3	2.3	J	2.2		4%
	Perfluoropentanesulfonic acid	4.6	1.4	2.9	J	3		3%
	Perfluorohexanesulfonic acid	3.7	1.4	33		31		6%
	Perfluoroheptanesulfonic acid	3.7	1.4	1.2	J	0.57	J	71%
	Perfluorooctanesulfonic acid	3.7	1.4	28.3		28		1%
	Perfluorononanesulfonic acid	3.7	1.4	1.9	U	0.86	U	NC
	Perfluorodecanesulfonic acid	3.7	1.4	1.9	U	0.43	U	NC
	Perfluorododecanesulfonic acid	4.6	1.5	3.7	U	0.91	U	NC
	4:2-FTS	19	5.5	7.4	U	1.7	U	NC
	6:2-FTS	19	5.6	7.4	U	1.7	U	NC
	8:2-FTS	19	5.6	7.4	U	3.5	U	NC
	PFOSA	3.7	1.5	1.9	U	0.23	U	NC
	MeFOSA	7.4	1.5	3.7	U	0.91	U	NC
	EtFOSA	7.4	1.5	3.7	U	0.91	U	NC
	MeFOSAA	4.6	1.5	3.7	U	0.91	U	NC
	EtFOSAA	4.6	1.5	3.7	U	0.91	U	NC
	MeFOSE	37	15	19	U	2.3	U	NC
	EtFOSE	37	15	19	U	4.6	U	NC
	HFPO-DA (GenX)	3.7	5.8	1.9	U	3.6	U	NC
	ADONA	7.4	5.5	3.7	U	3.5	U	NC
	PFMPA	7.4	2.9	1.9	U	1.8	U	NC
	PFMBA	7.4	2.9	3.7	U	0.46	U	NC
	NFDHA	7.4	64	3.7	U	55	U	NC
	9Cl-PF3ONS (F-53B Major)	7.4	11	3.7	U	6	U	NC
	11Cl-PF3OUdS (F-53B Minor)	7.4	11	3.7	U	6	U	NC
	PFEESA	7.4	5.1	1.9	U	2.8	U	NC
	3:3-FTCA	19	15	9.3	U	8	U	NC

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

	5:3-FTCA	93	36	19	U	28	U	NC
	7:3-FTCA	93	36	19	U	28	U	NC
LORNG_JBW7345B_05152024	Perfluorobutanoic acid	15	5.9	4.2	J	3.8		10%
	Perfluoropentanoic acid	7.4	3	5.9	J	5.7		3%
	Perfluorohexanoic acid	3.7	1.5	7		6.2		12%
	Perfluoroheptanoic acid	3.7	1.5	4.7		4.4		7%
	Perfluorooctanoic acid	3.7	1.5	5.5		6		9%
	Perfluorononanoic acid	3.7	1.5	1.9	U	0.39	J	NC
	Perfluorodecanoic acid	3.7	1.5	1.9	U	0.92	U	NC
	Perfluoroundecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorododecanoic acid	3.7	1.5	1.9	U	0.92	U	NC
	Perfluorotridecanoic acid	3.7	1.5	1.9	U	0.92	U	NC
	Perfluorotetradecanoic acid	3.7	1.5	1.9	U	0.46	U	NC
	Perfluorobutanesulfonic acid	3.7	1.3	2.2	J	2.3		4%
	Perfluoropentanesulfonic acid	4.6	1.4	3	J	2.5		18%
	Perfluorohexanesulfonic acid	3.7	1.4	29.5		27		9%
	Perfluoroheptanesulfonic acid	3.7	1.4	0.77	J	0.45	J	52%
	Perfluorooctanesulfonic acid	3.7	1.4	25.7		24		7%
	Perfluorononanesulfonic acid	3.7	1.4	1.9	U	0.87	U	NC
	Perfluorodecanesulfonic acid	3.7	1.4	1.9	U	0.43	U	NC
	Perfluorododecanesulfonic acid	4.6	1.5	3.7	U	0.92	U	NC
	4:2-FTS	19	5.5	7.4	U	1.8	U	NC
	6:2-FTS	19	5.6	7.4	U	1.8	U	NC
	8:2-FTS	19	5.6	7.4	U	3.5	U	NC
	PFOSA	3.7	1.5	1.9	U	0.23	U	NC
	MeFOSA	7.4	1.5	3.7	U	0.92	U	NC
	EtFOSA	7.4	1.5	3.7	U	0.92	U	NC
	MeFOSAA	4.6	1.5	3.7	U	0.92	U	NC
	EtFOSAA	4.6	1.5	3.7	U	0.92	U	NC
	MeFOSE	37	15	19	U	2.3	U	NC
	EtFOSE	37	15	19	U	4.6	U	NC
	HFPO-DA (GenX)	3.7	5.9	1.9	U	3.7	U	NC
	ADONA	7.4	5.5	3.7	U	3.5	U	NC
	PFMPA	7.4	3	1.9	U	1.8	U	NC
	PFMBA	7.4	3	3.7	U	0.46	U	NC
	NFDHA	7.4	65	3.7	U	55	U	NC
	9Cl-PF3ONS (F-53B Major)	7.4	11	3.7	U	6.1	U	NC
	11Cl-PF3OUdS (F-53B Minor)	7.4	11	3.7	U	6.1	U	NC
	PFEESA	7.4	5.2	1.9	U	2.9	U	NC
	3:3-FTCA	19	15	9.3	U	8.1	U	NC

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

	5:3-FTCA	93	37	19	U	29	U	NC
	7:3-FTCA	93	37	19	U	29	U	NC

Notes:

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

LOQ = Limit of Quantitation

NC = not calculated

prepared by MB
reviewed by CR
11/1/2024

Table 1 - Split Sample Comparison Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

Notes
± LOQ
± LOQ
± LOQ
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± LOQ
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prepared by MB
reviewed by CR
11/1/2024

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± LOQ

Table 1 - Split Sample Comparison Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15756, FC16453, FC16855

± LOQ
± LOQ

DATA VALIDATION REPORT

LORING PFAS RI
MAY AND JUNE 2024 GROUNDWATER
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

NOVEMBER 1, 2024

DATA VALIDATION REPORT

LORING PFAS RI
MAY AND JUNE 2024 GROUNDWATER
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

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November 1, 2024

Prepared by: _____ Date: 4 September 2024

Reviewed/Approved By: _____ Date: 11/1/2024

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LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4:2 FTS	1H,1H,2H,2H-perfluorohexane sulfonic acid
6:2 FTS	1H,1H, 2H, 2H-perfluorooctane sulfonic acid
7:3 FTCA	3-perfluoroheptyl propanoic acid
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSA	n-Ethyl-perfluorooctanesulfonamide
NEtFOSAA	n-Ethyl-perfluorooctanesulfonamidoacetic acid
NEtFOSE	n-Ethyl perfluorooctanesulfonamidoethanol
ng/L	nanograms per liter
NIS	non-extracted internal standard
NMeFOSA	n-Methyl perfluorooctanesulfonamide
NMeFOSE	n-Methyl perfluorooctanesulfonamidoethanol
PFAS	per- and polyfluoroalkyl substances
PFBS	Perfluorobutanesulfonic acid
PFDA	Perfluorodecanoic acid
PFDoS	Perfluorododecanesulfonic acid
PFDS	Perfluorodecanesulfonic acid
PFHpS	Perfluoroheptanesulfonic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexanesulfonic acid
PFNS	Perfluorononanesulfonic acid
PFOS	Perfluorooctanesulfonic acid
PFOSA	Perfluorooctanesulfonamide
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual

RPD	relative percent difference
SGS	SGS North America Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 172 aqueous samples, including 18 field duplicates and 9 equipment blanks between 2May 2024 and 7 June 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to SGS North America Inc. (SGS), located in Orlando, Florida, where they were received between 7 May 2024 and 12 June 2024 and assigned to job numbers FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, and FC16337. SGS analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

The field sample identifications (ID), sample collection dates, and the laboratory sample IDs are presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed DoD Stage 2B validation on the samples reviewed in this report. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum Revision 1, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- Department of Defense (DoD), 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Signal to noise ratios for the ICS;
- Bile salt interference check;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);

- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are aliquots of analyte free water that are used to rinse sample collection equipment after decontamination. Equipment blanks assess contamination attributed to insufficient equipment decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

CVHL	High ISC or CCV recovery.
IAG	Ion abundance ratio is outside of limits.
IVD	ICV recovery is outside of limits.
TR	The detected analyte concentration is less than the limit of quantitation (LOQ).

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, and at an average temperature less than the method-specified maximum of 6 degrees Celsius.

7 SPECIFIC DATA VALIDATION FINDINGS

Results from the samples reviewed in this report may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by Eurofins may be considered usable with the limitations described in Sections 7.1.1 through 7.1.14.

7.1.1 HOLDING TIMES

The samples were extracted within the method-specified maximum holding time of 28 days from sample collection and the extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

A mass calibration verification was performed before the ICAL associated with the analysis of the samples reviewed in this report.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%, with the following exceptions:

- n-Ethyl-perfluorooctanesulfonamide (NEtFOSA) recovery was low at 65.4% in the mid-level ICV associated with the analysis of samples LORNG_044-RW01_05032024, LORNG_BW18003_05032024, LORNG_BW18007_05032024, LORNG_EBGB_OW002_05032024, LORNG_JBW7107_05022024, LORNG_JBW7327_45_05022024, LORNG_JBW7327_45_05022024FD, LORNG_BW05006_05022024, LORNG_EBGB_BW001_05022024, LORNG_JBW7105_0502202, LORNG_JMW3102_05022024, and LORNG_USMW004_05022024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSA results from the associated samples because of the high ICV recoveries. (UJ, IVD)
- NEtFOSA recovery was low at 67.3% associated with the analysis of samples LORNG_BB_OW002_05092024, LORNG_JMW0991_05092024, LORNG_JMW7913_05092024, LORNG_JMW7916_05092024, LORNG_LF3MW4_05092024, LORNG_BB_BW001_05092024, LORNG_JMW0681_05092024, LORNG_JPZ0686_05092024, LORNG_OW16002_05092024, LORNG_USMW025_05092024, LORNG_USMW025_05092024FD, LORNG_BW17004_05102024, LORNG_JBW7203A_05102024, LORNG_OW20002_05102024, LORNG_OW23001_05102024, LORNG_SB/OW16001_05092024, and LORNG_SB/OW16001_05092024FD. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSA results from the associated samples because of the high ICV recoveries. (UJ, IVD)
- n-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) and n-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) recoveries were high at 144.2% and 139.0% respectively, associated with the analysis of samples LORNG_BW14005_05162024, LORNG_BW18009_05162024, LORNG_LF2MW1_05162024, LORNG_LF3MW3_05162024, LORNG_LF3MW3_05162024FD, LORNG_MMW0010_05162024, LORNG_MMW0010_05162024FD, LORNG_BW01006_05162024, LORNG_BW17005_05162024, LORNG_JPZ0349_05162024, LORNG_MMW0011_05162024, LORNG_OW22003_05162024, LORNG_SB/OW17001_05162024, LORNG_AA18MW-02_05162024, LORNG_JBW7710_05162024, LORNG_JMW1981_05162024, LORNG_MMW0124_05162024, LORNG_RFW-38_05162024, LORNG_043-MW03_05172024, LORNG_JBW7316_05172024, LORNG_JMW0961_05172024, and

LORNG_JPZ1780_05172024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE and NMeFOSE from the associated samples because of high ICV recoveries. (UJ, IVD)

- NEtFOSE (161%), n-methyl-perfluorooctanesulfonamide (NMeFOSA [132%]), and NMeFOSE (152%) recoveries were high in the mid-level ICV associated with the analysis of samples LORNG_BB_OW001_05212024, LORNG_BW08003_05212024, LORNG_BW13002_05212024, LORNG_BW18004_05212024, LORNG_JBW7734_05212024, LORNG_JBW7734_05212024FD, LORNG_UNK-044_05212024, LORNG_BW20001_05212024, LORNG_CBW02_05222024, LORNG_JBW7738A_0521202, LORNG_OW17002_05222024, LORNG_OW21005_05212024, LORNG_OW21005_05212024FD, LORNG_RFW1144_05212024, LORNG_BW13003_05222024, LORNG_BW17006_05222024, LORNG_JBW7341B_05222024, LORNG_JBW7737A_05222024, LORNG_JBW7737A_05222024FD, LORNG_JPZ7704_05222024, LORNG_OW17003_05222024, LORNG_BW06008_05222024, LORNG_JBW7737B_05222024, LORNG_JBW7737B_05222024FD, LORNG_JMW1960_05222024, LORNG_OW05004_05222024, LORNG_BW09001_05202024HS, LORNG_BW10006_05202024, LORNG_BW10006_05202024FD, LORNG_JBW7305_107_05202024, LORNG_JBW7714_05202024, LORNG_JBW7350_05172024, LORNG_JMW-0406_05172024, LORNG_JMW7322_05172024, LORNG_JPZ0606_05172024, LORNG_MMW0007B_05172024, LORNG_OW14004_05172024, LORNG_JBW7305_33_05202024, LORNG_MMW0423_05172024, LORNG_OW10005_05202024, LORNG_OW20006_05202024, LORNG_OW20007_05202024, LORNG_UNK-042_05202024, LORNG_BW03002_05212024, LORNG_BW10008_05212024, LORNG_BW18010_05212024, LORNG_JBW7403_05212024, LORNG_JMW0445_05202024, LORNG_MMW0017_05202024, LORNG_MMW0330_05212024, and LORNG_OW22001_05162024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected analyte results from the associated samples because of the high ICV recoveries. (UJ, IVD)
- NEtFOSE and NMeFOSE recoveries were high at 144% and 139% respectively, in the mid-level ICV associated with the analysis of samples LORNG_MMW3402R_05232024, LORNG_JMW0683_05232024, LORNG_RFW1147_05232024, LORNG_USGS2_125_05232024, LORNG_USGS2_40_05232024, LORNG_BW07001_05232024, LORNG_BW07002_05232024, LORNG_BW09001_0523202, LORNG_OW09001_05232024, and LORNG_OW09001_05232024FD. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE and NMeFOSE results from the associated samples because of high ICV recoveries. (UJ, IVD)
- NEtFOSE (163%), NMeFOSA (135%), and NMeFOSE (157%) recoveries were high in the mid-level ICV associated with analysis of samples LORNG_BW01009_05242024, LORNG_JBW7738B_05242024, LORNG_JPZ0348_05242024, LORNG_OW08002_05242024, LORNG_OW08002_05242024FD, LORNG_OW12002_05242024, LORNG_UNK-TC01_06032024, LORNG_JBW7348_06032024, LORNG_JBW7348_06032024FD, LORNG_JMW0880_06032024, LORNG_MMW0020_150_06032024, LORNG_MMW0020_60_06032024, LORNG_BW06007_06032024, LORNG_BW06007_06032024FD, LORNG_BW13001_06032024, LORNG_JBW7215B_06032024, and LORNG_JBW7336A_06032024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE, NMeFOSA, and NMeFOSE results from the associated samples because of high ICV recoveries. (UJ, IVD)
- NMeFOSA (131%), NMeFOSE (158%), and NEtFOSE (159%) recoveries were high in the mid-level ICV associated with the analysis of samples LORNG_AA11MW-01_06042024, LORNG_AA11MW-02_06042024, LORNG_BW12006_06042024, LORNG_JBW7753A_06052024, and LORNG_OW08001_06052024. Data limitations are summarized below.
    - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA results from the associated samples because of the high ICV recovery. (UJ, IVD)
    - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSE results from samples LORNG_AA11MW-01_06042024, LORNG_BW12006_06042024, and LORNG_OW08001_06052024 because of the high ICV recovery. (UJ, IVD)
    - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE results from samples LORNG_AA11MW-01_06042024 and LORNG_BW12006_06042024 because of the high ICV recovery.

- The remaining MeFOSE and/or EtFOSE results were not reported from the associated analyses and data usability is not adversely affected by the high ICV recoveries.

- NMeFOSE and NEtFOSE recoveries were high at 153% and 159%, respectively, in the mid-level ICV associated with the 1:2 dilution analysis of sample LORNG_BW12006_06042024 and the 1:10 dilution analyses of samples LORNG_AA11MW-02_06042024, LORNG_JBW7753A_06052024, and LORNG_OW08001_06052024. Data limitations are summarized below.
  - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSE results from the 1:10 dilution analyses of samples LORNG_AA11MW-02_06042024 and LORNG_JBW7753A_06052024 because of the high ICV recovery. (UJ, IVD)
  - Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE result from the 1:10 dilution analyses of samples LORNG_AA11MW-02_06042024, LORNG_JBW7753A_06052024, and LORNG_OW08001_06052024 because of the high ICV recoveries. (UJ, IVD)
  - NMeFOSE and NEtFOSE were not reported from the associated analysis of sample LORNG_BW12006_06042024 and NMeFOSE was not reported from the associated analysis of sample LORNG_OW08001_06052024. Data usability is not adversely affected by the high ICV recoveries.
- NEtFOSE and NMeFOSE recoveries were high at 171% and 158% respectively, in the mid-level ICV associated with the analysis of LORNG_AA18MW-01_06042024, LORNG_JMW1565_06042024, LORNG_JPZ0342_06042024, LORNG_OW07002_06042024, and LORNG_USMW003_06042024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSE and NMeFOSE results from the associated samples because of the high ICV recoveries. (UJ, IVD)

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits, with the follow exceptions:

- n-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) recovery was high at 132% in the ISC associated with the analysis of samples LORNG_JMW0683_05232024, LORNG_RFW1147_05232024, LORNG_USGS2_125_05232024, LORNG_USGS2_40_05232024, LORNG_BW07002_05232024, and LORNG_BW09001_0523202. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NEtFOSAA results from the associated samples because of the high ISC recovery. (UJ, CVHL)
- Perfluorodecanesulfonic acid (PFDS) recovery was high at 133.4% in the ISC associated with the analysis of samples LORNG_AA18MW-01_06042024, LORNG_JMW1565_06042024, LORNG_JPZ0342_06042024, LORNG_OW07002_06042024, and LORNG_USMW003_06042024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected PFDS results from the associated samples because of the high ISC recovery. (UJ, CVHL)

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits, with the following exceptions:

- NMeFOSA recoveries were high at 144%, 142%, and 132% in CCVs associated with the analysis of samples LORNG_JMW0683_05232024, LORNG_MMW3402R_05232024, LORNG_RFW1147_05232024, LORNG_USGS2_125_05232024, LORNG_USGS2_40_05232024, LORNG_BW07002_05232024, and LORNG_BW09001_05232024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected NMeFOSA results from the associated samples because of the high CCV recovery. (UJ, CVHL)
- 3-Perfluoroheptyl propanoic acid (7:3FTCA) recovery were high at 137%, 136%, and 133% in CCVs associated with the analysis of samples LORNG_AA11MW-01_06042024, LORNG_AA11MW-02_06042024,

LORNG_BW12006_06042024, LORNG_JBW7753A_06052024, and LORNG_OW08001_06052024. Per the DoD data validation guidelines, WSP UJ qualified the non-detected 7:3FTCA results from the associated samples because of the high CCV recoveries. (UJ, CVHL)

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY AND EQUIPMENT BLANK DETECTIONS

Target analytes were not detected in the laboratory blanks associated with the samples reviewed in this report, with the following exceptions:

- PFOS was detected at a concentration of 0.51 nanograms per liter (ng/L) in equipment blank LORNG_EB021_06062024 associated with samples LORNG_BW18008_06062024, LORNG_FMW3413_06062024, LORNG_JMW0882_06062024, LORNG_JMW0882_06062024FD, LORNG_JMW1982_06062024, LORNG_OW05002_06062024, LORNG_OW05002_06062024FD, LORNG_BW20002_06062024, LORNG_JBW7335A_06062024, LORNG_JMW1684_06062024, LORNG_JMW1684_06062024FD, LORNG_BW05009_06062024, LORNG_BW06005_06062024, LORNG_OW05003_06062024, and LORNG_OW05003_06062024FD. PFOS was detected in the associated samples at concentrations greater than five times the concentration detected in the equipment blank and data usability is not adversely affected by the blank detection.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

LLCS and LCS were included with each extraction batch, LLCS spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the QAPP-specified 40 to 150% interim limits, with the following exceptions:

- NEtFOSA recoveries were high in the LLCS and LCS, associated with the extraction of samples LORNG_RFW-38_05162024, LORNG_043-MW03_05172024, LORNG_JBW7316_05172024, LORNG_JMW0961_05172024, and LORNG_JPZ1780_05172024 at 239% and 228% respectively. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.
- NEtFOSA recoveries were high in the LLCS and LCS associated with the extraction of sample LORNG_OW22001_05162024 at 168% and 184% respectively. NEtFOSA was not detected in the associated sample and data usability is not adversely affected by potential high analytical bias.
- NEtFOSA and NEtFOSE recoveries were high at 166% and 151% respectively, in the LLCS associated with the extraction of samples LORNG_JMW0683_05232024, LORNG_MMW3402R_05232024, LORNG_RFW1147_05232024, LORNG_USGS2_125_05232024, LORNG_USGS2_40_05232024, LORNG_BW07002_05232024, and LORNG_BW09001_05232024. NEtFOSA and NEtFOSE were not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- NEtFOSA recovery was high at 159% in the LCS associated with the extraction of samples LORNG_JMW0683_05232024, LORNG_MMW3402R_05232024, LORNG_RFW1147_05232024, LORNG_USGS2_125_05232024, LORNG_USGS2_40_05232024, LORNG_BW07002_05232024, and LORNG_BW09001_05232024. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.
- NEtFOSA recoveries were high in the LLCS and LCS associated with the extraction of samples LORNG_BW07001_05232024, LORNG_OW09001_05232024, and LORNG_OW09001_05232024FD at 162% and 152%, respectively. NEtFOSA was not detected in the associated samples and data usability is not adversely affected by potential high analytical bias.

7.1.10 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ACCURACY AND PRECISION

SGS performed MS and/or MSD analyses on samples LORNG_EBGB_BW001_05022024, LORNG_JMW0991_05092024, LORNG_LF3MW3_05162024FD, LORNG_JPZ1780_05172024, LORNG_BB_OW001_05212024, LORNG_OW05004_05222024, LORNG_BW07001_05232024, LORNG_JMW0880_06032024, LORNG_JBW7215B_06032024, LORNG_JPZ0342_06042024, and LORNG_JMW1684_06062024FD. Recoveries were within the QAPP-specified 40 to 150% interim limits and RPDs between MS and MSD results were less than 30%, with the following exceptions:

- PFOS recoveries were high at 192% and 158% in the MS and MSD preformed on sample LORNG_OW05004_05222024. The PFOS concentrations detected in the unspiked native sample, at 0.115 µg/L was more than three times the spike concentrations 0.023 and 0.0227 µg/L, and it is not possible to assess data usability for this analyte in this sample based on the MS recoveries.
- Perfluorohexanoic acid (PFHxA) and perfluorohexanesulfonic acid (PFHxS) recoveries were high at 154% and 327% respectively, performed on sample LORNG_JPZ0342_06042024. The PFHxA and PFHxS concentrations detected in the unspiked native sample, at 0.0789 µg/L and 0.305 µg/L, respectively, were more than three times the spike concentrations of 0.0227 µg/L and 0.0208 µg/L, respectively, and it is not possible to assess data usability for these analytes in this sample based on the MS recoveries.
- NEtFOSA recovery was high at 240% in the MS performed on sample LORNG_LF3MW3_05162024FD. NEtFOSA was not detected in the unspiked native sample and data usability is not adversely affected by the potential high analytical bias.
- Perfluorododecanesulfonic acid (PFDoS [217%, MS]), NEtFOSA (196%,225%), and 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS [205%, MS]) recoveries were high in the MS and/or MSD performed on sample LORNG_JPZ1780_05172024. Additionally, RPDs between the MS and MSD results were high for perfluorotridecanoic acid (34%), PFDS, (50%), PFDoS, (94%), and 11Cl-PF3OUdS (88%). These analytes were not detected in the unspiked native sample and data usability is not adversely affected by potential high analytical bias and/or analytical imprecision.
- NEtFOSA recoveries were high in the MS and MSD performed on sample LORNG_BW07001_05232024 at 160% and 167%, respectively. NEtFOSA was not detected in the unspiked native sample and data usability is not adversely affected by the potential high analytical bias.

7.1.11 DUPLICATE PRECISION

SGS performed a duplicate analysis on sample LORNG_MMW0010_05162024, LORNG_BW08003_05212024, LORNG_OW07002_06042024, and LORNG_BW05009_06062024. RPDs between primary and duplicate results were less than 30% or differences between detected concentrations were less than the LOQ. A summary of field duplicate results is presented in Table 4.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries in the field samples were within the laboratory-specified 20 to 180% limits for $^{13}C_2$-1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS), $^{13}C_2$-1H,1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS), and $^{13}C_2$-1H,1H, 2H,2H-perfluorodecane sulfonic acid, or the QAPP-specified 20 to 150% interim limits for the remaining EISs, with the following exceptions:

- Recovery of the EIS $^{13}C_2$-6:2 FTS was high at 193% in the undiluted analysis of sample LORNG_BW05009_06062024 SGS chose to report the 6:2 FTS result from the 1:5 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high in the undiluted analyses of samples LORNG_CBW02_05222024 (195%), LORNG_OW10005_05202024 (301%), and LORNG_JMW0445_05202024 (182%). SGS chose to report the

4:2FTS from 1:10 dilutions, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries

- Recoveries of the EISs ^{13}C2-4:2 FTS and ^{13}C2-6:2 FTS were high at 247% and 215%, respectively, in the undiluted analysis of sample LORNG_MMW3402R_05232024. SGS chose to report 4:2 FTS and 6:2 FTS from the 1:10 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EIS D_7-NMeFOSE and D_9-NEtFOSE were high at 162% and 168% respectively, in the undiluted analysis of sample LORNG_AA11MW-02_06042024. SGS chose to report NMeFOSE and NEtFOSE from the 1:10 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EIS D_7-NMeFOSE and D_9-NEtFOSE were both high at 154% in the undiluted analysis of sample LORNG_JBW7753A_06052024. SGS chose to report NMeFOSE and NEtFOSE from the 1:10 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recoveries.
- Recovery of the D_9-NEtFOSE was high at 153% in the undiluted analysis of sample LORNG_OW08001_06052024. SGS chose to report NEtFOSE from the 1:10 dilution, which exhibited acceptable EIS recoveries, and data usability is not adversely affected by the high EIS recovery.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.14 ION RATIO

Ratios between primary and confirmation ions were within the QAPP-specified limits of 50 to 150% of the ion ratios measured in the midpoint calibration standard or daily CCV, with the following exceptions:

- The ion ratio for perfluorobutanesulfonic acid (PFBS) was high at 167% in sample LORNG_JBW7327_45_05022024FD. WSP J qualified the affected PFBS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for perfluorooctanesulfonamide (PFOSA) was high at 180% in sample LORNG_OW16002_05092024. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFHxA was high at 188% in sample LORNG_BW18009_05162024. WSP J qualified the affected PFHxA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for perfluorodecanoic acid (PFDA) was high at 153% in the sample LORNG_LF3MW3_05162024FD. WSP J qualified the affected PFDA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFHxA was high at 200% in the sample LORNG_OW17003_05222024. WSP J qualified the affected PFHxA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratios for perfluorononanesulfonic acid (PFNS) and PFOSA were outside of limits at 44.7% and 194% respectively, in the sample LORNG_JBW7737B_05222024. WSP J qualified the affected PFNS and PFOSA results because the ion ratios were outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 151% in the sample LORNG_JBW7737B_05222024FD. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 154% in the sample LORNG_BW20001_05212024. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)

- The ion ratios for PFNS and PFOSA were outside of limits at 28.0% and 237% respectively, in the sample LORNG_JMW-0406_05172024. WSP J qualified the affected PFNS and PFOSA results because the ion ratios were outside of limits. (J, IAG)
- The ion ratio for PFNS was low at 36.5% in the sample LORNG_OW05004_05222024. WSP J qualified the affected PFNS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for perfluoroheptanesulfonic acid (PFHpS) was low at 47.8% in the sample LORNG_BW10006_05202024. WSP J qualified the affected PFHpS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 189% in the sample LORNG_BW07001_05232024. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFNS was low at 46.0% in the sample LORNG_OW08002_05242024FD. WSP J qualified the affected PFNS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFNS was low at 47.8% in the sample LORNG_BW06007_06032024. WSP J qualified the affected PFNS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFNS was low at 46.5% in the sample LORNG_BW06007_06032024FD. WSP J qualified the affected PFNS result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 151% in the sample LORNG_OW08002_05242024. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFNS was low at 46.7% in the sample LORNG_AA11MW-02_06042024. WSP J flagged the detection for PFNS in the associated sample because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 159% in the sample LORNG_OW08001_06052024. WSP J flagged the detection for PFOSA in the associated sample because the ion ratio was outside of limits. (J, IAG)
- The ion ratio for PFOSA was high at 216% in the sample LORNG_JMW1665_06072024. WSP J qualified the affected PFOSA result because the ion ratio was outside of limits. (J, IAG)

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS' J qualifiers. (J, TR)

Data from the field sample are reported in ng/L while QC results are reported in micrograms per liter. Spiked concentrations are correct and WSP did not qualify any data based on the unit mismatch.

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_USMW025_05092024, LORNG_SB/OW16001_05092024, LORNG_LF3MW3_05162024, LORNG_MMW0010_05162024, LORNG_JBW7734_05212024, LORNG_OW21005_05212024, LORNG_JBW7327_45_05022024, LORNG_JBW7737A_05222024, LORNG_JBW7737B_05222024, LORNG_BW10006_05202024, LORNG_OW09001_05232024, LORNG_OW08002_05242024, LORNG_JBW7348_06032024, LORNG_BW06007_06032024, LORNG_JMW0882_06062024, LORNG_OW05002_06062024, LORNG_JMW1684_06062024, and LORNG_OW05003_06062024. RPDs between primary and field duplicate results were less than the QAPP-specified maximum of 30% or differences between concentrations were less than the average RL, indicating acceptable sampling and analytical precision. Results from the primary samples and their field duplicate are presented in Table 4.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 6,520 data records from the field sample during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- WSP J qualified 686 records (10.5%) because of detected concentrations less than the LOQ and/or ion ratios were outside of limits.
- UJ: WSP UJ qualified 345 records (5.3%) because of high and low ICV, CCV, and/or ISC recoveries.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum Revision 1, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

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EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15432	044-RW01	LORNG_044-RW01_05032024	FC15432-1	5/3/2024	WG	N	40
	BW05006	LORNG_BW05006_05022024	FC15432-8	5/2/2024	WG	N	40
	BW18003	LORNG_BW18003_05032024	FC15432-2	5/3/2024	WG	N	40
	BW18007	LORNG_BW18007_05032024	FC15432-3	5/3/2024	WG	N	40
	EBGB_BW001	LORNG_EBGB_BW001_05022024	FC15432-9	5/2/2024	WG	N	40
	EBGB_OW002	LORNG_EBGB_OW002_05032024	FC15432-4	5/3/2024	WG	N	40
	JBW7105	LORNG_JBW7105_05022024	FC15432-10	5/2/2024	WG	N	40
	JBW7107	LORNG_JBW7107_05022024	FC15432-5	5/2/2024	WG	N	40
	JBW7327	LORNG_JBW7327_45_05022024	FC15432-6	5/2/2024	WG	N	40
		LORNG_JBW7327_45_05022024FD	FC15432-7	5/2/2024	WG	FD	40
	JMW3102	LORNG_JMW3102_05022024	FC15432-11	5/2/2024	WG	N	40
	USMW004	LORNG_USMW004_05022024	FC15432-12	5/2/2024	WG	N	40
FC15647	BB_BW001	LORNG_BB_BW001_05092024	FC15647-6	5/9/2024	WG	N	40
	BB_OW002	LORNG_BB_OW002_05092024	FC15647-1	5/9/2024	WG	N	40
	BW17004	LORNG_BW17004_05102024	FC15647-13	5/10/2024	WG	N	40
	FIELDQC	LORNG_EB007_05092024	FC15647-7	5/9/2024	WQ	EB	40
		LORNG_EB008_05102024	FC15647-14	5/10/2024	WQ	EB	40
	JBW7203A	LORNG_JBW7203A_05102024	FC15647-15	5/10/2024	WG	N	40
	JMW0681	LORNG_JMW0681_05092024	FC15647-8	5/9/2024	WG	N	40
	JMW0991	LORNG_JMW0991_05092024	FC15647-2	5/9/2024	WG	N	40
	JMW7913	LORNG_JMW7913_05092024	FC15647-3	5/9/2024	WG	N	40
	JMW7916	LORNG_JMW7916_05092024	FC15647-4	5/9/2024	WG	N	40
	JPZ0686	LORNG_JPZ0686_05092024	FC15647-9	5/9/2024	WG	N	40
	LF3MW4	LORNG_LF3MW4_05092024	FC15647-5	5/9/2024	WG	N	40
	OW16002	LORNG_OW16002_05092024	FC15647-10	5/9/2024	WG	N	40
	OW20002	LORNG_OW20002_05102024	FC15647-16	5/10/2024	WG	N	40
	OW23001	LORNG_OW23001_05102024	FC15647-17	5/10/2024	WG	N	40
	SB/OW16001	LORNG_SB/OW16001_05092024	FC15647-18	5/9/2024	WG	N	40
		LORNG_SB/OW16001_05092024FD	FC15647-19	5/9/2024	WG	FD	40
	USMW025	LORNG_USMW025_05092024	FC15647-11	5/9/2024	WG	N	40
		LORNG_USMW025_05092024FD	FC15647-12	5/9/2024	WG	FD	40
FC15852	043-MW03	LORNG_043-MW03_05172024	FC15852-21	5/17/2024	WG	N	40
	AA18MW-02	LORNG_AA18MW-02_05162024	FC15852-15	5/16/2024	WG	N	40
	BW01006	LORNG_BW01006_05162024	FC15852-8	5/16/2024	WG	N	40
	BW14005	LORNG_BW14005_05162024	FC15852-1	5/16/2024	WG	N	40
	BW17005	LORNG_BW17005_05162024	FC15852-9	5/16/2024	WG	N	40
	BW18009	LORNG_BW18009_05162024	FC15852-2	5/16/2024	WG	N	40
	FIELDQC	LORNG_EB015_05162024	FC15852-10	5/16/2024	WQ	EB	40
	JBW7316	LORNG_JBW7316_05172024	FC15852-22	5/17/2024	WG	N	40
	JBW7710	LORNG_JBW7710_05162024	FC15852-16	5/16/2024	WG	N	40
	JMW0961	LORNG_JMW0961_05172024	FC15852-23	5/17/2024	WG	N	40
	JMW1981	LORNG_JMW1981_05162024	FC15852-17	5/16/2024	WG	N	40
	JPZ0349	LORNG_JPZ0349_05162024	FC15852-11	5/16/2024	WG	N	40
	JPZ1780	LORNG_JPZ1780_05172024	FC15852-24	5/17/2024	WG	N	40
	LF2MW1	LORNG_LF2MW1_05162024	FC15852-3	5/16/2024	WG	N	40
	LF3MW3	LORNG_LF3MW3_05162024	FC15852-4	5/16/2024	WG	N	40
		LORNG_LF3MW3_05162024FD	FC15852-5	5/16/2024	WG	FD	40

Prepared by:AKN
Date:9//24
Checked by: MDS
Date: 9/11/2024

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15852	MMW0010	LORNG_MMW0010_05162024	FC15852-6	5/16/2024	WG	N	40
		LORNG_MMW0010_05162024FD	FC15852-7	5/16/2024	WG	FD	40
	MMW0011	LORNG_MMW0011_05162024	FC15852-12	5/16/2024	WG	N	40
	MMW0124	LORNG_MMW0124_05162024	FC15852-18	5/16/2024	WG	N	40
	OW22001	LORNG_OW22001_05162024	FC15852-19	5/16/2024	WG	N	40
	OW22003	LORNG_OW22003_05162024	FC15852-13	5/16/2024	WG	N	40
	RFW-38	LORNG_RFW-38_05162024	FC15852-20	5/16/2024	WG	N	40
	SB/OW17001	LORNG_SB/OW17001_05162024	FC15852-14	5/16/2024	WG	N	40
FC15912	BB_OW001	LORNG_BB_OW001_05212024	FC15912-1	5/21/2024	WG	N	40
	BW03002	LORNG_BW03002_05212024	FC15912-45	5/21/2024	WG	N	40
	BW06008	LORNG_BW06008_05222024	FC15912-22	5/22/2024	WG	N	40
	BW08003	LORNG_BW08003_05212024	FC15912-2	5/21/2024	WG	N	40
	BW09001	LORNG_BW09001_05202024HS	FC15912-27	5/20/2024	WG	N	40
	BW10006	LORNG_BW10006_05202024	FC15912-28	5/20/2024	WG	N	40
		LORNG_BW10006_05202024FD	FC15912-29	5/20/2024	WG	FD	40
	BW10008	LORNG_BW10008_05212024	FC15912-46	5/21/2024	WG	N	40
	BW13002	LORNG_BW13002_05212024	FC15912-3	5/21/2024	WG	N	40
	BW13003	LORNG_BW13003_05222024	FC15912-15	5/22/2024	WG	N	40
	BW17006	LORNG_BW17006_05222024	FC15912-16	5/22/2024	WG	N	40
	BW18004	LORNG_BW18004_05212024	FC15912-4	5/21/2024	WG	N	40
	BW18010	LORNG_BW18010_05212024	FC15912-47	5/21/2024	WG	N	40
	BW20001	LORNG_BW20001_05212024	FC15912-8	5/21/2024	WG	N	40
	CBW02	LORNG_CBW02_05222024	FC15912-9	5/22/2024	WG	N	40
	JBW7305	LORNG_JBW7305_107_05202024	FC15912-30	5/20/2024	WG	N	40
		LORNG_JBW7305_33_05202024	FC15912-39	5/20/2024	WG	N	40
	JBW7341B	LORNG_JBW7341B_05222024	FC15912-17	5/22/2024	WG	N	40
	JBW7350	LORNG_JBW7350_05172024	FC15912-33	5/17/2024	WG	N	40
	JBW7403	LORNG_JBW7403_05212024	FC15912-48	5/21/2024	WG	N	40
	JBW7714	LORNG_JBW7714_05202024	FC15912-31	5/20/2024	WG	N	40
	JBW7734	LORNG_JBW7734_05212024	FC15912-5	5/21/2024	WG	N	40
		LORNG_JBW7734_05212024FD	FC15912-6	5/21/2024	WG	FD	40
	JBW7737A	LORNG_JBW7737A_05222024	FC15912-18	5/22/2024	WG	N	40
		LORNG_JBW7737A_05222024FD	FC15912-19	5/22/2024	WG	FD	40
	JBW7737B	LORNG_JBW7737B_05222024	FC15912-23	5/22/2024	WG	N	40
		LORNG_JBW7737B_05222024FD	FC15912-24	5/22/2024	WG	FD	40
	JBW7738A	LORNG_JBW7738A_05212024	FC15912-10	5/21/2024	WG	N	40
	JMW-0406	LORNG_JMW-0406_05172024	FC15912-34	5/17/2024	WG	N	40
	JMW0445	LORNG_JMW0445_05202024	FC15912-49	5/20/2024	WG	N	40
	JMW1960	LORNG_JMW1960_05222024	FC15912-25	5/22/2024	WG	N	40
	JMW7322	LORNG_JMW7322_05172024	FC15912-35	5/17/2024	WG	N	40
	JPZ0606	LORNG_JPZ0606_05172024	FC15912-36	5/17/2024	WG	N	40
	JPZ7704	LORNG_JPZ7704_05222024	FC15912-20	5/22/2024	WG	N	40
	MMW0004	LORNG_MMW0004_05202024	FC15912-32	5/20/2024	WG	N	40
	MMW0007B	LORNG_MMW0007B_05172024	FC15912-37	5/17/2024	WG	N	40
	MMW0017	LORNG_MMW0017_05202024	FC15912-50	5/20/2024	WG	N	40
	MMW0330	LORNG_MMW0330_05212024	FC15912-51	5/21/2024	WG	N	40
	MMW0423	LORNG_MMW0423_05172024	FC15912-40	5/17/2024	WG	N	40
	OW05004	LORNG_OW05004_05222024	FC15912-26	5/22/2024	WG	N	40
	OW10005	LORNG_OW10005_05202024	FC15912-41	5/20/2024	WG	N	40

Prepared by:AKN
Date:9//24
Checked by: MDS
Date: 9/11/2024

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15912	OW14004	LORNG_OW14004_05172024	FC15912-38	5/17/2024	WG	N	40
	OW17002	LORNG_OW17002_05222024	FC15912-11	5/22/2024	WG	N	40
	OW17003	LORNG_OW17003_05222024	FC15912-21	5/22/2024	WG	N	40
	OW20006	LORNG_OW20006_05202024	FC15912-42	5/20/2024	WG	N	40
	OW20007	LORNG_OW20007_05202024	FC15912-43	5/20/2024	WG	N	40
	OW21005	LORNG_OW21005_05212024	FC15912-12	5/21/2024	WG	N	40
		LORNG_OW21005_05212024FD	FC15912-13	5/21/2024	WG	FD	40
	RFW1144	LORNG_RFW1144_05212024	FC15912-14	5/21/2024	WG	N	40
	UNK-042	LORNG_UNK-042_05202024	FC15912-44	5/20/2024	WG	N	40
	UNK-044	LORNG_UNK-044_05212024	FC15912-7	5/21/2024	WG	N	40
FC15948A	BW07001	LORNG_BW07001_05232024	FC15948-28	5/23/2024	WG	N	40
	BW07002	LORNG_BW07002_05232024	FC15948-29	5/23/2024	WG	N	40
	BW09001	LORNG_BW09001_05232024	FC15948-30	5/23/2024	WG	N	40
	JMW0683	LORNG_JMW0683_05232024	FC15948-23	5/23/2024	WG	N	40
	MMW3402R	LORNG_MMW3402R_05232024	FC15948-24	5/23/2024	WG	N	40
	OW09001	LORNG_OW09001_05232024	FC15948-31	5/23/2024	WG	N	40
		LORNG_OW09001_05232024FD	FC15948-32	5/23/2024	WG	FD	40
	RFW1147	LORNG_RFW1147_05232024	FC15948-25	5/23/2024	WG	N	40
	USGS2	LORNG_USGS2_125_05232024	FC15948-26	5/23/2024	WG	N	40
		LORNG_USGS2_40_05232024	FC15948-27	5/23/2024	WG	N	40
FC16137	BW01009	LORNG_BW01009_05242024	FC16137-1	5/24/2024	WG	N	40
	BW06007	LORNG_BW06007_06032024	FC16137-13	6/3/2024	WG	N	40
		LORNG_BW06007_06032024FD	FC16137-14	6/3/2024	WG	FD	40
	BW13001	LORNG_BW13001_06032024	FC16137-15	6/3/2024	WG	N	40
	JBW7215B	LORNG_JBW7215B_06032024	FC16137-16	6/3/2024	WG	N	40
	JBW7336A	LORNG_JBW7336A_06032024	FC16137-17	6/3/2024	WG	N	40
	JBW7348	LORNG_JBW7348_06032024	FC16137-8	6/3/2024	WG	N	40
		LORNG_JBW7348_06032024FD	FC16137-9	6/3/2024	WG	FD	40
	JBW7738B	LORNG_JBW7738B_05242024	FC16137-2	5/24/2024	WG	N	40
	JMW0880	LORNG_JMW0880_06032024	FC16137-10	6/3/2024	WG	N	40
	JPZ0348	LORNG_JPZ0348_05242024	FC16137-3	5/24/2024	WG	N	40
	MMW0020	LORNG_MMW0020_150_06032024	FC16137-11	6/3/2024	WG	N	40
		LORNG_MMW0020_60_06032024	FC16137-12	6/3/2024	WG	N	40
	OW08002	LORNG_OW08002_05242024	FC16137-4	5/24/2024	WG	N	40
		LORNG_OW08002_05242024FD	FC16137-5	5/24/2024	WG	FD	40
	OW12002	LORNG_OW12002_05242024	FC16137-6	5/24/2024	WG	N	40
	UNK-TC01	LORNG_UNK-TC01_06032024	FC16137-7	6/3/2024	WG	N	40
FC16207	AA18MW-01	LORNG_AA18MW-01_06042024	FC16207-1	6/4/2024	WG	N	40
	FIELDQC	LORNG_EB019_06032024	FC16207-2	6/3/2024	WQ	EB	40
		LORNG_EB020_06032024	FC16207-3	6/3/2024	WQ	EB	40
	JMW1565	LORNG_JMW1565_06042024	FC16207-4	6/4/2024	WG	N	40
	JPZ0342	LORNG_JPZ0342_06042024	FC16207-5	6/4/2024	WG	N	40
	OW07002	LORNG_OW07002_06042024	FC16207-6	6/4/2024	WG	N	40
	USMW003	LORNG_USMW003_06042024	FC16207-7	6/4/2024	WG	N	40
FC16236	AA11MW-01	LORNG_AA11MW-01_06042024	FC16236-1	6/4/2024	WG	N	40
	AA11MW-02	LORNG_AA11MW-02_06042024	FC16236-2	6/4/2024	WG	N	40
	BW12006	LORNG_BW12006_06042024	FC16236-3	6/4/2024	WG	N	40
FC16236	JBW7753A	LORNG_JBW7753A_06052024	FC16236-4	6/5/2024	WG	N	40
	OW08001	LORNG_OW08001_06052024	FC16236-5	6/5/2024	WG	N	40

Prepared by:AKN
Date:9//24
Checked by: MDS
Date: 9/11/2024

Table 1 - Sample and Analysis Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC16337	AA20MW-01	LORNG_AA20MW-01_06072024	FC16337-22	6/7/2024	WG	N	40
	ASMW101	LORNG_ASMW101_06072024	FC16337-23	6/7/2024	WG	N	40
	BW01005	LORNG_BW01005_06072024	FC16337-24	6/7/2024	WG	N	40
	BW05009	LORNG_BW05009_06062024	FC16337-15	6/6/2024	WG	N	40
	BW06005	LORNG_BW06005_06062024	FC16337-16	6/6/2024	WG	N	40
	BW18008	LORNG_BW18008_06062024	FC16337-1	6/6/2024	WG	N	40
	BW20002	LORNG_BW20002_06062024	FC16337-8	6/6/2024	WG	N	40
	FIELDQC	LORNG_EB021_06062024	FC16337-9	6/6/2024	WQ	EB	40
		LORNG_EB022_06062024	FC16337-10	6/6/2024	WQ	EB	40
		LORNG_EB023_06072024	FC16337-17	6/7/2024	WQ	EB	40
		LORNG_EB024_06072024	FC16337-18	6/7/2024	WQ	EB	40
	FMW3413	LORNG_FMW3413_06062024	FC16337-2	6/6/2024	WG	N	40
	JBW7304	LORNG_JBW7304_06072024	FC16337-19	6/7/2024	WG	N	40
	JBW7335A	LORNG_JBW7335A_06062024	FC16337-11	6/6/2024	WG	N	40
	JBW7335B	LORNG_JBW7335B_06062024	FC16337-12	6/6/2024	WG	N	40
	JBW7912	LORNG_JBW7912_150_06072024	FC16337-25	6/7/2024	WG	N	40
		LORNG_JBW7912_46_06072024	FC16337-26	6/7/2024	WG	N	40
	JMW0882	LORNG_JMW0882_06062024	FC16337-3	6/6/2024	WG	N	40
		LORNG_JMW0882_06062024FD	FC16337-4	6/6/2024	WG	FD	40
	JMW0980	LORNG_JMW0980_06072024	FC16337-27	6/7/2024	WG	N	40
	JMW1665	LORNG_JMW1665_06072024	FC16337-28	6/7/2024	WG	N	40
	JMW1684	LORNG_JMW1684_06062024	FC16337-13	6/6/2024	WG	N	40
		LORNG_JMW1684_06062024FD	FC16337-14	6/6/2024	WG	FD	40
	JMW1982	LORNG_JMW1982_06062024	FC16337-5	6/6/2024	WG	N	40
	OW05002	LORNG_OW05002_06062024	FC16337-6	6/6/2024	WG	N	40
		LORNG_OW05002_06062024FD	FC16337-7	6/6/2024	WG	FD	40
	OW05003	LORNG_OW05003_06062024	FC16337-20	6/6/2024	WG	N	40
		LORNG_OW05003_06062024FD	FC16337-21	6/6/2024	WG	FD	40

Notes:

N = Total

N = Normal Field Sample, FD = Field Duplicate, EB = Equipment Blank

WG = Groundwater; WQ = Water Quality Control

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:9//24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

				SDG	FC15432									
				Location	044-RW01	BW05006	BW18003	BW18007	EBGB_BW001	EBGB_OW002	JBW7105	JBW7107	JBW7327	
				Sample Date	5/3/2024	5/2/2024	5/3/2024	5/3/2024	5/2/2024	5/3/2024	5/2/2024	5/2/2024	5/2/2024	
				Sample ID	LORNG_044-RW01_05032024	LORNG_BW05006_05022024	LORNG_BW18003_05032024	LORNG_BW18007_05032024	LORNG_EBGB_BW001_05022024	LORNG_EBGB_OW002_05032024	LORNG_JBW7105_05022024	LORNG_JBW7107_05022024	LORNG_JBW7327_45_05022024	LORNG_JBW7327_45_05022024FD
				QC Code	N	N	N	N	N	N	N	N	N	FD
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	5.5 J	5.5 J	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.2 J	1.9 U	3.1 J	1.9 U	12.1	11.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.1 J	0.75 J	1.9 J	0.6 J	16	16.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	0.5 J	1.9 U	0.72 J	1.9 U	4	3.8	
		Perfluorooctanoic acid (PFOA)	NG/L	0.91 U	1 J	0.91 U	0.85 J	1.2 J	1.1 J	0.79 J	0.93 U	6.2	6.2	
		Perfluorononanoic acid (PFNA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	0.59 J	1.9 U	0.68 J	0.61 J	1.7 J	1.2 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	1.4 J	1.2 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.8 U	1.8 J	1.1 J	2.6 J	4.8	2.2 J	2.6 J	2.4 J	13.9	14.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.8 U	1.7 J	1.8 U	2.2 J	5	1.9 U	0.87 J	0.81 J	3.4 J	3.5 J	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3 U	7.4 U	7.3 U	7.7 U	7.3 U	7.5 U	7.3 U	7.4 U	7.3 U	7.3 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3 U	7.4 U	7.3 U	7.7 U	7.3 U	7.5 U	7.3 U	7.4 U	396	453	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3 U	7.4 U	7.3 U	7.7 U	7.3 U	7.5 U	7.3 U	7.4 U	7.3 U	7.3 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6 UJ	3.7 UJ	3.6 UJ	3.8 UJ	3.6 UJ	3.8 UJ	3.6 UJ	3.7 UJ	3.6 UJ	3.6 UJ	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 U	19 U	18 U	19 U	18 U	19 U	18 U	19 U	18 U	18 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 U	19 U	18 U	19 U	18 U	19 U	18 U	19 U	18 U	18 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.7 U	3.6 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.6 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1 U	9.3 U	9.1 U	9.6 U	9.1 U	9.4 U	9.1 U	9.3 U	9.1 U	9.1 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	19 U	18 U	19 U	18 U	19 U	18 U	19 U	18 U	18 U	

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC15432																	
			Location	044-RW01		BW05006		BW18003		BW18007		EBGB_BW001		EBGB_OW002		JBW7105		JBW7107		JBW7327	
			Sample Date	5/3/2024		5/2/2024		5/3/2024		5/3/2024		5/2/2024		5/3/2024		5/2/2024		5/2/2024		5/2/2024	
			Sample ID	LORNG_044-RW01_05032024		LORNG_BW05006_05022024		LORNG_BW18003_05032024		LORNG_BW18007_05032024		LORNG_EBGB_BW001_05022024		LORNG_EBGB_OW002_05032024		LORNG_JBW7105_05022024		LORNG_JBW7107_05022024		LORNG_JBW7327_45_05022024	LORNG_JBW7327_45_05022024FD
			QC Code	N		N		N		N		N		N		N		N		N	FD
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	19	U	18	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

Prepared by: AKN
Date: 9/5/24
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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG				FC15647										
		Location	JMW3102	USMW004	BB_BW001	BB_OW002	BW17004	FIELDQC		JBW7203A	JMW0681	JMW0991				
		Sample Date	5/2/2024	5/2/2024	5/9/2024	5/9/2024	5/10/2024	5/9/2024	5/10/2024	5/10/2024	5/9/2024	5/9/2024				
		Sample ID	LORNG_JMW3102_05022024	LORNG_USMW004_05022024	LORNG_BB_BW001_05092024	LORNG_BB_OW002_05092024	LORNG_BW17004_05102024	LORNG_EB007_05092024	LORNG_EB008_05102024	LORNG_JBW7203A_05102024	LORNG_JMW0681_05092024	LORNG_JMW0991_05092024				
		QC Code	N	N	N	N	N	EB	EB	N	N	N				
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	21.1		4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	6.2	J	2.9	J	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	55.6		2	U	2.7	J	1.9	U	2.8	J	1.9	U	1.9	U	10.7		2.6	J	1.3	J
		Perfluorohexanoic acid (PFHxA)	NG/L	37.5		2	U	3.8		1.9	U	2.6	J	1.9	U	1.9	U	8.3		2.9	J	2.4	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.4	J	2	U	1.1	J	1.9	U	1.6	J	1.9	U	1.9	U	5.4		1.2	J	1	J
		Perfluorooctanoic acid (PFOA)	NG/L	3.9		1	U	3.8		0.96	U	2.3	J	0.93	U	0.94	U	6.3		1.9	J	4.6	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.4	J	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	J	2	U	1.1	J	1.9	U	2	U	1.9	U	1.9	U	1.9	J	1.8	J	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	2.5	J	1.6	J	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	0.97	J	0.75	J	11.8		1.8	J	8.8		1.9	U	1.9	U	22.2		11.6		6.4	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	0.85	J	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	2	U	3.2	J	1.9	U	5.3		1.9	U	1.9	U	27.5		7.2		13.5	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	8	U	7.5	U	7.7	U	7.8	U	7.4	U	7.5	U	7.3	U	7.5	U	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	8	U	7.5	U	7.7	U	7.8	U	7.4	U	7.5	U	7.3	U	7.5	U	7.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	8	U	7.5	U	7.7	U	7.8	U	7.4	U	7.5	U	7.3	U	7.5	U	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	UJ	4	UJ	3.8	UJ	3.8	UJ	3.9	UJ	3.7	U	3.8	U	3.6	UJ	3.8	UJ	3.8	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	20	U	19	U	19	U	20	U	19	U	19	U	18	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	20	U	19	U	19	U	20	U	19	U	19	U	18	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	4	U	3.8	U	3.8	U	3.9	U	3.7	U	3.8	U	3.6	U	3.8	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	2	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	10	U	9.4	U	9.6	U	9.8	U	9.3	U	9.4	U	9.1	U	9.4	U	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	20	U	19	U	19	U	20	U	19	U	19	U	18	U	19	U	19	U

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Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG								FC15647															
Location				JMW3102		USMW004		BB_BW001		BB_OW002		BW17004		FIELDQC				JBW7203A		JMW0681		JMW0991	
Sample Date				5/2/2024		5/2/2024		5/9/2024		5/9/2024		5/10/2024		5/9/2024		5/10/2024		5/10/2024		5/9/2024		5/9/2024	
Sample ID				LORNG_JMW3102_05022024		LORNG_USMW004_05022024		LORNG_BB_BW001_05092024		LORNG_BB_OW002_05092024		LORNG_BW17004_05102024		LORNG_EB007_05092024		LORNG_EB008_05102024		LORNG_JBW7203A_05102024		LORNG_JMW0681_05092024		LORNG_JMW0991_05092024	
QC Code				N		N		N		N		N		EB		EB		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	20	U	19	U	19	U	20	U	19	U	19	U	18	U	19	U	19	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG						
			Location	JMW7913		JMW7916		JPZ0686	
			Sample Date	5/9/2024		5/9/2024		5/9/2024	
			Sample ID	LORNG_JMW7913_05092024		LORNG_JMW7916_05092024		LORNG_JPZ0686_05092024	
			QC Code	N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	5.1	J	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.1	J	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.5	J	0.57	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.1	J	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	1.8	J	0.82	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	0.7	J	0.55	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.7	U	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	13.5		4	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	5.4		2.1	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.7	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.4	U	7.4	U	7.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.4	U	7.4	U	7.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.4	U	7.4	U	7.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	UJ	3.7	UJ	3.8	UJ
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.7	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.7	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.7	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.7	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.7	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.7	U	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.7	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.3	U	9.6	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG							
			Location	JMW7913		JMW7916		JPZ0686		
			Sample Date	5/9/2024		5/9/2024		5/9/2024		
			Sample ID	LORNG_JMW7913_05092024		LORNG_JMW7916_05092024		LORNG_JPZ0686_05092024		
			QC Code	N		N		N		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U	

Notes:
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FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
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			SDG	FC15647												FC15852	
			Location	LF3MW4	OW16002	OW20002	OW23001	SB/OW16001		USMW025		043-MW03	AA18MW-02				
			Sample Date	5/9/2024	5/9/2024	5/10/2024	5/10/2024	5/9/2024		5/9/2024		5/17/2024	5/16/2024				
			Sample ID	LORNG_LF3MW4_05092024	LORNG_OW16002_05092024	LORNG_OW20002_05102024	LORNG_OW23001_05102024	LORNG_SB/OW16001_05092024	LORNG_SB/OW16001_05092024FD	LORNG_USMW025_05092024	LORNG_USMW025_05092024FD	LORNG_043-MW03_05172024	LORNG_AA18MW-02_05162024				
			QC Code	N	N	N	N	N	FD	N	FD	N	N				
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.9	J	3.8	J	2.8	J	5.3	J	5.3	J	5.5	J	3.5	J	3.6	J	5.2	J	3.7	J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.3	J	5.2	J	4.4	J	11		5.1	J	5	J	2.9	J	2.9	J	3.6	J	6.1	J
		Perfluorohexanoic acid (PFHxA)	NG/L	3.4	J	5.7		3.5	J	8.7		14.5		13.5		2.9	J	3	J	2.6	J	3.9	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.8	J	2.2	J	2.4	J	6.1		4.4		4.5		2.1	J	2	J	1.9	J	2.7	J
		Perfluorooctanoic acid (PFOA)	NG/L	6.1		2.9	J	2.6	J	5.8		8.9		9		3.7		3.7	J	3.1	J	2	J
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	0.58	J	1.9	U	0.8	J	1.2	J	1.1	J	1.8	U	1.9	U	2.4	U	2	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	0.51	J	0.54	J	2.4	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	0.73	J	0.7	J	2.4	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.57	J	1	J	1.4	J	2.2	J	0.82	J	0.73	J	1	J	0.78	J	1.4	J	0.89	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.6	U	3.6	U	1.3	J	2.8	J	3.6	U	4	U	3.6	U	3.8	U	1.9	J	4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7.2		9		14.4		26.3		14.6		13.5		20.5		20.8		16.5		6.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	1.8	U	1.9	U	0.91	J	1.8	U	2	U	1.8	U	1.9	U	0.93	J	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13.9		8.3		8.6		26.1		14.5		14.7		13.3		13.4		55		3.8	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.3	U	7.7	U	7.5	U	7.3	U	8	U	7.3	U	7.5	U	9.6	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.3	U	7.7	U	7.5	U	7.3	U	8	U	7.3	U	7.5	U	9.6	U	8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.3	U	7.7	U	7.5	U	7.3	U	8	U	7.3	U	7.5	U	9.6	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.1	J	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	UJ	3.6	UJ	3.8	UJ	3.8	UJ	3.6	UJ	4	UJ	3.6	UJ	3.8	UJ	4.8	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	18	U	19	U	19	U	18	U	20	U	18	U	19	U	24	UJ	20	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	18	U	19	U	19	U	18	U	20	U	18	U	19	U	24	UJ	20	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.6	U	3.8	U	3.8	U	3.6	U	4	U	3.6	U	3.8	U	4.8	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	2	U	1.8	U	1.9	U	2.4	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.1	U	9.6	U	9.4	U	9.1	U	10	U	9.1	U	9.4	U	12	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	19	U	19	U	18	U	20	U	18	U	19	U	24	U	20	U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG		FC15647														FC15852	
		Location		LF3MW4		OW16002		OW20002		OW23001		SB/OW16001		USMW025				043-MW03	AA18MW-02
		Sample Date		5/9/2024		5/9/2024		5/10/2024		5/10/2024		5/9/2024		5/9/2024				5/17/2024	5/16/2024
		Sample ID		LORNG_LF3MW4_05092024		LORNG_OW16002_05092024		LORNG_OW20002_05102024		LORNG_OW23001_05102024		LORNG_SB/OW16001_05092024		LORNG_SB/OW16001_05092024FD		LORNG_USMW025_05092024		LORNG_USMW025_05092024FD		LORNG_043-MW03_05172024	LORNG_AA18MW-02_05162024
		QC Code		N		N		N		N		N		FD		N		FD		N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	19	U	19	U	18	U	20	U	18	U	19	U	24	U	20	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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			SDG		
			Location		BW01006
			Sample Date		5/16/2024
			Sample ID		LORNG_BW01006_05162024
			QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6.5	J
		Perfluoropentanoic acid (PFPeA)	NG/L	13.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	11.1	
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.2	
		Perfluorooctanoic acid (PFOA)	NG/L	10.4	
		Perfluorononanoic acid (PFNA)	NG/L	1.5	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	50.5	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.2	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	45.5	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.2	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.2	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.2	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG		
		Location		BW01006
		Sample Date		5/16/2024
		Sample ID		LORNG_BW01006_05162024
		QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U

Notes:
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J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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SDG				FC15852																			
Location				BW14005		BW17005		BW18009		FIELDQC		JBW7316		JBW7710		JMW0961		JMW1981		JPZ0349		JPZ1780	
Sample Date				5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/17/2024		5/16/2024		5/17/2024		5/16/2024		5/16/2024		5/17/2024	
Sample ID				LORNG_BW14005_05162024		LORNG_BW17005_05162024		LORNG_BW18009_05162024		LORNG_EB015_05162024		LORNG_JBW7316_05172024		LORNG_JBW7710_05162024		LORNG_JMW0961_05172024		LORNG_JMW1981_05162024		LORNG_JPZ0349_05162024		LORNG_JPZ1780_05172024	
QC Code				N		N		N		EB		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5.3	J	8.7	J	2.9	J	3.6	U	3.4	J	6.9	J	4.5	U	4.2	J	3.6	U	5.4	J
		Perfluoropentanoic acid (PFPeA)	NG/L	8.3		20.4		2.2	U	1.8	U	4	J	11.3		2.2	U	8.2		4.4	J	8.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	11.4		13.1		0.97	J	1.8	U	3.3	J	10.9		2.9	J	6.4		4.2		9.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.2		12.1		2.2	U	1.8	U	1.5	J	4.9		1.3	J	3.7		1.8	J	5.5	
		Perfluorooctanoic acid (PFOA)	NG/L	10.5		7.2		0.95	J	0.9	U	2.6	J	9.5		5.4		4.5		4.5		9.3	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	0.77	J	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	0.57	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.7	J	1.3	J	0.75	J	1.8	U	1.4	J	2.5	J	0.57	J	2.1	J	0.95	J	2.3	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.5	J	1.9	J	4.3	U	3.6	U	1.3	J	3.5	J	4.5	U	2.6	J	1.1	J	2.9	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	46.8		24		8.7		1.8	U	13.8		43		6.9		26.4		18.9		63.8	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.4	J	1.8	U	2.2	U	1.8	U	2.1	U	1.1	J	2.2	U	0.95	J	1.8	U	1	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	37.8		17.8		2.9	J	7.9		8.5		39.1		14.6		23.4		9		32.3	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7	U	7.2	U	8.6	U	7.2	U	8.5	U	8.5	U	9	U	7.4	U	7.2	U	7.1	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.7	U	7.2	U	8.6	U	7.2	U	8.5	U	8.5	U	9	U	7.4	U	7.2	U	7.1	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7	U	7.2	U	8.6	U	7.2	U	8.5	U	8.5	U	9	U	7.4	U	7.2	U	7.1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	2.5	J	3.7	U	3.6	U	3.5	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ	18	UJ	22	UJ	18	U	21	UJ	21	UJ	22	UJ	19	UJ	18	UJ	18	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ	18	UJ	22	UJ	18	U	21	UJ	21	UJ	22	UJ	19	UJ	18	UJ	18	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.6	U	4.3	U	3.6	U	4.3	U	4.3	U	4.5	U	3.7	U	3.6	U	3.5	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	2.2	U	1.8	U	2.1	U	2.1	U	2.2	U	1.9	U	1.8	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U	9	U	11	U	9	U	11	U	11	U	11	U	9.3	U	9	U	8.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	22	U	18	U	21	U	21	U	22	U	19	U	18	U	18	U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG				FC15852																	
Location				BW14005		BW17005		BW18009		FIELDQC		JBW7316		JBW7710		JMW0961		JMW1981		JPZ0349		JPZ1780	
Sample Date				5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/17/2024		5/16/2024		5/17/2024		5/16/2024		5/16/2024		5/17/2024	
Sample ID				LORNG_BW14005_05162024		LORNG_BW17005_05162024		LORNG_BW18009_05162024		LORNG_EB015_05162024		LORNG_JBW7316_05172024		LORNG_JBW7710_05162024		LORNG_JMW0961_05172024		LORNG_JMW1981_05162024		LORNG_JPZ0349_05162024		LORNG_JPZ1780_05172024	
QC Code				N		N		N		EB		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	22	U	18	U	21	U	21	U	22	U	19	U	18	U	18	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG		
			Location		LF2MW1
			Sample Date		5/16/2024
			Sample ID		LORNG_LF2MW1_05162024
			QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.3	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2.2	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.2	U
		Perfluorooctanoic acid (PFOA)	NG/L	1.5	J
		Perfluorononanoic acid (PFNA)	NG/L	2.2	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.2	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.3	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	5.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	11.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.3	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.7	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.7	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.7	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.3	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.3	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.3	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.3	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	22	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	22	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.3	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.3	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.3	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.3	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.3	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	11	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	22	U

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May and June 2024 Groundwater
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Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG		
		Location		LF2MW1
		Sample Date		5/16/2024
		Sample ID		LORNG_LF2MW1_05162024
		QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	22 U

Notes:

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FD = Field Duplicate

EB = Equipment Blank

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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			SDG	FC15852																			
			Location	LF3MW3		MMW0010				MMW0011		MMW0124		OW22001		OW22003		RFW-38		SB/OW17001			
			Sample Date	5/16/2024		5/16/2024				5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/16/2024			
			Sample ID	LORNG_LF3MW3_05162024		LORNG_LF3MW3_05162024FD		LORNG_MMW0010_05162024		LORNG_MMW0010_05162024FD		LORNG_MMW0011_05162024		LORNG_MMW0124_05162024		LORNG_OW22001_05162024		LORNG_OW22003_05162024		LORNG_RFW-38_05162024		LORNG_SB/OW17001_05162024	
			QC Code	N		FD		N		FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4.1	U	3.8	U	7.3	J	7.1	J	7.1	J	3.5	J	4	U	3.7	U	3.4	U	10.2	J
		Perfluoropentanoic acid (PFPeA)	NG/L	2.1	U	1.9	U	16		16.7		15.2		4.9	J	2	U	1.3	J	1.7	U	23.4	
		Perfluorohexanoic acid (PFHxA)	NG/L	2.1	U	1.9	U	16.2		16.8		16		3.4	J	1.4	J	1.5	J	1.7	U	13.6	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.1	U	0.74	J	10.5		10.8		9.8		2.7	J	0.81	J	0.72	J	1.7	U	3.7	
		Perfluorooctanoic acid (PFOA)	NG/L	1	U	1.2	J	12.5		12.6		12.1		4.6		1.7	J	1.6	J	0.86	U	2.4	J
		Perfluorononanoic acid (PFNA)	NG/L	2.1	U	0.66	J	1.1	J	1.3	J	1.1	J	2.2	U	0.62	J	1.8	U	1.7	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.1	U	0.64	J	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.1	U	1.9	U	3.6	J	4		3.2	J	1.1	J	2	U	0.47	J	1.7	U	2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1	U	3.8	U	3.7	J	4.2	J	3.7	J	1.3	J	4	U	3.7	U	3.4	U	1.1	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.1	U	1.9	U	54.1		57.9		51.9		10.9		13.5		11		1.7	U	10.2	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.1	U	1.9	U	1.8	J	1.7	J	1.5	J	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	16.4		17.8		66		72		67.6		11.8		26.4		12.4		1.7	U	4.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.2	U	7.7	U	7.5	U	7.3	U	7.5	U	8.8	U	7.9	U	7.3	U	6.9	U	7.1	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.2	U	7.7	U	7.5	U	7.3	U	7.5	U	8.8	U	7.9	U	7.3	U	6.9	U	7.1	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.2	U	7.7	U	7.5	U	7.3	U	7.5	U	8.8	U	7.9	U	7.3	U	6.9	U	7.1	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	UJ	3.7	U	3.4	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	21	UJ	19	UJ	19	UJ	18	UJ	19	UJ	22	UJ	20	UJ	18	UJ	17	UJ	18	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	21	UJ	19	UJ	19	UJ	18	UJ	19	UJ	22	UJ	20	UJ	18	UJ	17	UJ	18	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.1	U	3.8	U	3.7	U	3.6	U	3.8	U	4.4	U	4	U	3.7	U	3.4	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.1	U	1.9	U	1.9	U	1.8	U	1.9	U	2.2	U	2	U	1.8	U	1.7	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10	U	9.6	U	9.3	U	9.1	U	9.4	U	11	U	9.9	U	9.2	U	8.6	U	8.9	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	21	U	19	U	19	U	18	U	19	U	22	U	20	U	18	U	17	U	18	U

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SDG				FC15852																			
Location				LF3MW3				MMW0010				MMW0011		MMW0124		OW22001		OW22003		RFW-38		SB/OW17001	
Sample Date				5/16/2024				5/16/2024				5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/16/2024		5/16/2024	
Sample ID				LORNG_LF3MW3_05162024		LORNG_LF3MW3_05162024FD		LORNG_MMW0010_05162024		LORNG_MMW0010_05162024FD		LORNG_MMW0011_05162024		LORNG_MMW0124_05162024		LORNG_OW22001_05162024		LORNG_OW22003_05162024		LORNG_RFW-38_05162024		LORNG_SB/OW17001_05162024	
QC Code				N		FD		N		FD		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	21	U	19	U	19	U	18	U	19	U	22	U	20	U	18	U	17	U	18	U

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			SDG	FC15912																			
			Location	BB_OW001		BW03002		BW06008		BW08003		BW09001		BW10006				BW10008		BW13002		BW13003	
			Sample Date	5/21/2024		5/21/2024		5/22/2024		5/21/2024		5/20/2024		5/20/2024				5/21/2024		5/21/2024		5/22/2024	
			Sample ID	LORNG_BB_OW001_05212024		LORNG_BW03002_05212024		LORNG_BW06008_05222024		LORNG_BW08003_05212024		LORNG_BW09001_05202024HS		LORNG_BW10006_05202024		LORNG_BW10006_05202024FD		LORNG_BW10008_05212024		LORNG_BW13002_05212024		LORNG_BW13003_05222024	
			QC Code	N		N		N		N		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	7.4	J	3.6	U	2.6	J	7.7	J	3.3	J	4.5	J	4.4	J	3.8	U	2	J	6.1	J
		Perfluoropentanoic acid (PFPeA)	NG/L	14.8		1.4	J	2.4	J	15.7		6.6	J	8.1		7.8	J	1.2	J	2.5	J	10.6	
		Perfluorohexanoic acid (PFHxA)	NG/L	15.9		2.3	J	2.1	J	14.9		6.4		8.6		9.7		2.2	J	1.6	J	10.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	2.5	J	0.83	J	2.3	J	5.4		1.8	J	3.7	J	3.4	J	1.9	U	0.71	J	14.5	
		Perfluorooctanoic acid (PFOA)	NG/L	9.5		1.9	J	2	J	9.2		3.5	J	9.4		8.7		1.2	J	0.52	J	13.7	
		Perfluorononanoic acid (PFNA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.6	J
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.1	J	1.8	U	0.82	J	1.5	J	0.57	J	2.1	J	2.1	J	1.9	U	1.9	U	2.5	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2	J	3.6	U	4	U	1.6	J	3.9	U	2.8	J	2.8	J	3.8	U	3.7	U	3	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	29.3		8.2		7.9		32		8.7		37.3		36.5		1.6	J	0.82	J	22.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.5	J	1.8	U	2	U	1.8	U	1.9	U	1	J	1.1	J	1.9	U	1.9	U	0.96	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	13.8		0.67	J	10.5		5.8		1.1	J	33.1		31.4		1.4	J	0.8	J	35.5	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.8	U	7.3	U	8	U	7.2	U	7.8	U	7.7	U	8	U	7.5	U	7.5	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.8	U	7.3	U	8	U	7.2	U	7.8	U	7.7	U	8	U	3.3	J	7.5	U	7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U	7.3	U	8	U	7.2	U	7.8	U	7.7	U	8	U	7.5	U	7.5	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	UJ	3.6	UJ	4	UJ	3.6	UJ	3.9	UJ	3.8	UJ	4	UJ	3.8	UJ	3.7	UJ	3.7	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	UJ	18	UJ	20	UJ	18	UJ	19	UJ	19	UJ	20	UJ	19	UJ	19	UJ	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	UJ	18	UJ	20	UJ	18	UJ	19	UJ	19	UJ	20	UJ	19	UJ	19	UJ	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U	3.6	U	4	U	3.6	U	3.9	U	3.8	U	4	U	3.8	U	3.7	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	1.8	U	2	U	1.8	U	1.9	U	1.9	U	2	U	1.9	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.8	U	9.1	U	10	U	9	U	9.7	U	9.6	U	10	U	9.4	U	9.3	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	18	U	20	U	18	U	19	U	19	U	20	U	19	U	19	U	19	U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG				FC15912																	
Location				BB_OW001		BW03002		BW06008		BW08003		BW09001		BW10006				BW10008		BW13002		BW13003	
Sample Date				5/21/2024		5/21/2024		5/22/2024		5/21/2024		5/20/2024		5/20/2024				5/21/2024		5/21/2024		5/22/2024	
Sample ID				LORNG_BB_OW001_05212024		LORNG_BW03002_05212024		LORNG_BW06008_05222024		LORNG_BW08003_05212024		LORNG_BW09001_05202024HS		LORNG_BW10006_05202024		LORNG_BW10006_05202024FD		LORNG_BW10008_05212024		LORNG_BW13002_05212024		LORNG_BW13003_05222024	
QC Code				N		N		N		N		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	18	U	20	U	18	U	19	U	19	U	20	U	19	U	19	U	19	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG		
			Location		BW17006
			Sample Date		5/22/2024
			Sample ID		LORNG_BW17006_05222024
			QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.7	J
		Perfluoropentanoic acid (PFPeA)	NG/L	5.8	J
		Perfluorohexanoic acid (PFHxA)	NG/L	3.8	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.2	J
		Perfluorooctanoic acid (PFOA)	NG/L	0.86	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.3	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.92	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	
			Location	BW17006
			Sample Date	5/22/2024
			Sample ID	LORNG_BW17006_05222024
			QC Code	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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				SDG	FC15912									
				Location	BW18004	BW18010	BW20001	CBW02	JBW7305		JBW7341B	JBW7350	JBW7403	JBW7714
				Sample Date	5/21/2024	5/21/2024	5/21/2024	5/22/2024	5/20/2024		5/22/2024	5/17/2024	5/21/2024	5/20/2024
				Sample ID	LORNG_BW18004_05212024	LORNG_BW18010_05212024	LORNG_BW20001_05212024	LORNG_CBW02_05222024	LORNG_JBW7305_33_05202024	LORNG_JBW7305_107_05202024	LORNG_JBW7341B_05222024	LORNG_JBW7350_05172024	LORNG_JBW7403_05212024	LORNG_JBW7714_05202024
				QC Code	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8 U	3.7 U	7.8 J	3.6 J	8.3 J	9.4 J	6.4 J	2.4 J	3.7 U	68.7	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	2.8 J	17.4	1.8 U	22.4	25.3	14.7	4.4 J	1.9 U	32.7	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.2 J	2 J	16.6	2.1 J	16.8	18.5	22.1	5.7	1.9 U	21	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	16.2	0.72 J	9.6	10.1	7.9	3.7 J	1.9 U	27.6	
		Perfluorooctanoic acid (PFOA)	NG/L	0.94 U	1.2 J	17.5	1.3 J	10.5	12.2	24.7	6.2	0.93 U	26.4	
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	1.7 J	1.8 U	0.86 J	1 J	1.2 J	2 U	1.9 U	4.2	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.9 U	2.9 J	0.56 J	3.9	4.3	3 J	1.2 J	1.9 U	0.72 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8 U	3.7 U	4.3 J	3.7 U	5.1	6	4.1 J	1.5 J	3.7 U	4.1 U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	1.9 U	84.3	8	53.7	59.5	134	20	1.9 U	10.5	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	2.1 J	1.8 U	1.7 J	2 J	2 J	2 U	1.9 U	2.1 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	0.94 J	87.3	5.1	45.7	49.2	72.1	8.2	1.9 U	26.2	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5 U	7.4 U	7.3 U	73 U	7.4 U	8 U	7.5 U	7.8 U	7.4 U	8.2 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5 U	7.4 U	7.3 U	7.3 U	7.4 U	8 U	7.5 U	7.8 U	7.4 U	14.8 J	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5 U	7.4 U	7.3 U	7.3 U	7.4 U	8 U	7.5 U	7.8 U	7.4 U	7.8 J	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	0.94 J	1.8 U	1.9 U	2 U	3.9	2 U	1.9 U	2.1 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8 UJ	3.7 UJ	3.6 UJ	3.7 UJ	3.7 UJ	4 UJ	3.7 UJ	3.9 UJ	3.7 UJ	4.1 UJ	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19 UJ	19 UJ	18 UJ	18 UJ	19 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19 UJ	19 UJ	18 UJ	18 UJ	19 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8 U	3.7 U	3.6 U	3.7 U	3.7 U	4 U	3.7 U	3.9 U	3.7 U	4.1 U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2.1 U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4 U	9.3 U	9.1 U	9.2 U	9.3 U	10 U	9.3 U	9.8 U	9.3 U	10 U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19 U	19 U	18 U	18 U	19 U	20 U	19 U	20 U	19 U	21 U	

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Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC15912									
			Location	BW18004	BW18010	BW20001	CBW02	JBW7305		JBW7341B	JBW7350	JBW7403	JBW7714
			Sample Date	5/21/2024	5/21/2024	5/21/2024	5/22/2024	5/20/2024		5/22/2024	5/17/2024	5/21/2024	5/20/2024
			Sample ID	LORNG_BW18004_05212024	LORNG_BW18010_05212024	LORNG_BW20001_05212024	LORNG_CBW02_05222024	LORNG_JBW7305_33_05202024	LORNG_JBW7305_107_05202024	LORNG_JBW7341B_05222024	LORNG_JBW7350_05172024	LORNG_JBW7403_05212024	LORNG_JBW7714_05202024
			QC Code	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U	19 U	18 U	18 U	19 U	20 U	19 U	20 U	19 U	21 U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG		FC15912									
		Location		JBW7734		JBW7737A		JBW7737B		JBW7738A	JMW-0406	JMW0445	JMW1960
		Sample Date		5/21/2024		5/22/2024		5/22/2024		5/21/2024	5/17/2024	5/20/2024	5/22/2024
		Sample ID		LORNG_JBW7734_05212024	LORNG_JBW7734_05212024FD	LORNG_JBW7737A_05222024	LORNG_JBW7737A_05222024FD	LORNG_JBW7737B_05222024	LORNG_JBW7737B_05222024FD	LORNG_JBW7738A_05212024	LORNG_JMW-0406_05172024	LORNG_JMW0445_05202024	LORNG_JMW1960_05222024
		QC Code		N	FD	N	FD	N	FD	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8 J	3.7 J	9.5 J	9.4 J	11.8 J	11.7 J	5.9 J	3.2 J	5.9 J	4.1 U
		Perfluoropentanoic acid (PFPeA)	NG/L	5.8 J	5.9 J	23	23.3	27.7	27.4	14.3	1.3 J	3.7 J	11.6
		Perfluorohexanoic acid (PFHxA)	NG/L	6.6	6.3	37.6	35.8	38	38.3	21	1.5 J	2.2 J	12.3
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.7	4.8	9.5	9.3	15.3	15.3	5.4	1.4 J	1.7 J	6.2
		Perfluorooctanoic acid (PFOA)	NG/L	5.6	5.4	12.6	11.2	17.9	18	7.2	2.4 J	3.7	13.3
		Perfluorononanoic acid (PFNA)	NG/L	0.71 J	0.7 J	1.9 U	0.71 J	1.3 J	1.5 J	1.9 U	1.8 J	1.1 J	0.93 J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.7 J	1.8 J	16.7	16.4	16.6	16.5	9.4	1.8 J	1 J	2.8 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.5 J	2.6 J	17.4	18	21.1	22.2	10.1	2.6 J	3.7 U	3.1 J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	36.6	36.2	90	91.5	151	155	59.1	34.9	11.8	42.2
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.2 J	1.1 J	7.8	7.6	11.2	10	3.5 J	1.2 J	1.9 U	1.5 J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	43.2	44	239	232	381	288	81.7	80.7	6	108
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	1 J	0.73 J	1.9 U	0.74 J	1.9 U	2.1 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.6 U	7.5 U	7.4 U	7.7 U	7.8 U	8 U	7.6 U	8 U	74 U	8.2 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.6 U	7.5 U	4.8 J	4.6 J	7.8 U	8 U	7.6 U	8 U	7.4 U	8.2 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.6 U	7.5 U	7.4 U	7.7 U	7.8 U	8 U	7.6 U	8 U	7.4 U	8.2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	0.72 J	0.68 J	1.9 U	1 J	1.9 U	5.3
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8 UJ	3.8 UJ	3.7 UJ	3.8 UJ	3.9 UJ	4 UJ	3.8 UJ	4 UJ	3.7 UJ	4.1 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19 UJ	19 UJ	19 UJ	19 UJ	20 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19 UJ	19 UJ	19 UJ	19 UJ	20 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8 U	3.8 U	3.7 U	3.8 U	3.9 U	4 U	3.8 U	4 U	3.7 U	4.1 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.5 U	9.4 U	9.3 U	9.6 U	9.8 U	10 U	9.5 U	10 U	9.3 U	10 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19 U	19 U	19 U	19 U	20 U	20 U	19 U	20 U	19 U	21 U

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG				FC15912															
		Location		JBW7734		JBW7737A		JBW7737B		JBW7738A		JMW-0406		JMW0445		JMW1960					
		Sample Date		5/21/2024		5/22/2024		5/22/2024		5/21/2024		5/17/2024		5/20/2024		5/22/2024					
		Sample ID		LORNG_JBW7734_05212024		LORNG_JBW7734_05212024FD		LORNG_JBW7737A_05222024		LORNG_JBW7737A_05222024FD		LORNG_JBW7737B_05222024		LORNG_JBW7737B_05222024FD		LORNG_JBW7738A_05212024		LORNG_JMW-0406_05172024		LORNG_JMW0445_05202024		LORNG_JMW1960_05222024	
		QC Code		N		FD		N		FD		N		FD		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U	19	U	20	U	20	U	19	U	20	U	19	U	21	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG					
			Location	JMW7322		JPZ0606		JPZ7704	
			Sample Date	5/17/2024		5/17/2024		5/22/2024	
			Sample ID	LORNG_JMW7322_05172024		LORNG_JPZ0606_05172024		LORNG_JPZ7704_05222024	
			QC Code	N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	8.7	J	8.5	J	6.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	23.3		3.3	J	14.7	
		Perfluorohexanoic acid (PFHxA)	NG/L	13.1		6.5		11.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.2		2.1	J	4.9	
		Perfluorooctanoic acid (PFOA)	NG/L	9.1		3.3	J	6.8	
		Perfluorononanoic acid (PFNA)	NG/L	0.98	J	1.4	J	2.1	U
		Perfluorodecanoic acid (PFDA)	NG/L	2.2	U	2	U	2.1	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2.2	U	2	U	2.1	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2.2	U	2	U	2.1	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2.2	U	2	U	2.1	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2.2	U	2	U	2.1	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.3	J	1.6	J	2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4	J	2.7	J	2.6	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	30.3		32.1		27.4	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.7	J	1.2	J	0.67	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19.6		46.7		19	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2.2	U	2	U	2.1	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2.2	U	2	U	2.1	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.3	U	4.1	U	4.2	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.6	U	8.2	U	8.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.6	U	8.2	U	8.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.6	U	8.2	U	8.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2.2	U	2	U	2.1	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.3	UJ	4.1	UJ	4.2	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.3	U	4.1	U	4.2	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.3	U	4.1	U	4.2	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.3	U	4.1	U	4.2	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	22	UJ	20	UJ	21	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	22	UJ	20	UJ	21	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2.2	U	2	U	2.1	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.3	U	4.1	U	4.2	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2.2	U	2	U	2.1	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.3	U	4.1	U	4.2	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.3	U	4.1	U	4.2	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.3	U	4.1	U	4.2	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.3	U	4.1	U	4.2	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2.2	U	2	U	2.1	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	11	U	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	22	U	20	U	21	U

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Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG					
			Location	JMW7322		JPZ0606		JPZ7704
			Sample Date	5/17/2024		5/17/2024		5/22/2024
			Sample ID	LORNG_JMW7322_05172024		LORNG_JPZ0606_05172024		LORNG_JPZ7704_05222024
			QC Code	N		N		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	22	U	20	U	21	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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		SDG	FC15912									
		Location	MMW0004	MMW0007B	MMW0017	MMW0330	MMW0423	OW05004	OW10005	OW14004	OW17002	OW17003
		Sample Date	5/20/2024	5/17/2024	5/20/2024	5/21/2024	5/17/2024	5/22/2024	5/20/2024	5/17/2024	5/22/2024	5/22/2024
		Sample ID	LORNG_MMW0004_05202024	LORNG_MMW0007B_05172024	LORNG_MMW0017_05202024	LORNG_MMW0330_05212024	LORNG_MMW0423_05172024	LORNG_OW05004_05222024	LORNG_OW10005_05202024	LORNG_OW14004_05172024	LORNG_OW17002_05222024	LORNG_OW17003_05222024
		QC Code	N	N	N	N	N	N	N	N	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	2.8 J	5.5 J	5.6 J	5.3 J	1.7 J	10.3 J	8.6 J	13.4 J	60.6	3.2 J
		Perfluoropentanoic acid (PFPeA)	NG/L	3.3 J	12.9	12.8	8.2	1.2 J	18.5	11.2	24.2	184	1.7 J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 J	13.5	15.8	9.8	1.6 J	12.9	11.9	27.5	51.4	1.1 J
		Perfluoroheptanoic acid (PFHpA)	NG/L	0.72 J	7.4	8	5.9	1.1 J	18.4	6.1	14.1	15.5	0.82 J
		Perfluorooctanoic acid (PFOA)	NG/L	1.5 J	9.5	12.2	6.9	2.2 J	11.1	5.3	34.8	1.7 J	2.5 J
		Perfluorononanoic acid (PFNA)	NG/L	2 U	0.72 J	0.95 J	0.75 J	1.8 U	2.6 J	0.76 J	2 U	1.9 U	2.1 U
		Perfluorodecanoic acid (PFDA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorododecanoic acid (PFDoA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2 U	2.8 J	2.9 J	3.2 J	1.1 J	4.8	2.2 J	5.3	0.76 J	1.3 J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1 U	3.5 J	3.5 J	4.9	3.6 U	7.5	2.5 J	5.3	3.8 U	4.1 U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2.3 J	39	53.8	50.8	12.5	65.7	18.7	68	1.9 U	5.1
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2 U	1.1 J	1.6 J	2.2 J	1.8 U	2.4 J	0.58 J	2 U	1.9 U	2.1 U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.3 J	33.9	69.9	65.9	6.4	115	27.4	2.6 J	0.79 J	1.4 J
		Perfluorononanesulfonic acid (PFNS)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	1.4 J	1.9 U	2 U	1.9 U	2.1 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	8.2 U	8.2 U	7.5 U	7.3 U	7.3 U	7.8 U	75 U	8 U	7.5 U	8.2 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	8.2 U	8.2 U	7.5 U	7.3 U	7.3 U	4.9 J	7.5 U	8 U	7.5 U	8.2 U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	8.2 U	8.2 U	7.5 U	7.3 U	7.3 U	7.8 U	7.5 U	8 U	7.5 U	8.2 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2 U	2 U	0.77 J	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4.1 U	4.1 UJ	3.8 UJ	3.6 UJ	3.6 UJ	3.9 UJ	3.8 UJ	4 UJ	3.8 UJ	4.1 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20 U	20 UJ	19 UJ	18 UJ	18 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20 U	20 UJ	19 UJ	18 UJ	18 UJ	20 UJ	19 UJ	20 UJ	19 UJ	21 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4.1 U	4.1 U	3.8 U	3.6 U	3.6 U	3.9 U	3.8 U	4 U	3.8 U	4.1 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2 U	2 U	1.9 U	1.8 U	1.8 U	2 U	1.9 U	2 U	1.9 U	2.1 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	10 U	10 U	9.4 U	9.1 U	9.1 U	9.8 U	9.4 U	10 U	9.4 U	10 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20 U	20 U	19 U	18 U	18 U	20 U	19 U	20 U	19 U	21 U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

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Data Validation Report
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Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG				FC15912																	
Location				MMW0004		MMW0007B		MMW0017		MMW0330		MMW0423		OW05004		OW10005		OW14004		OW17002		OW17003	
Sample Date				5/20/2024		5/17/2024		5/20/2024		5/21/2024		5/17/2024		5/22/2024		5/20/2024		5/17/2024		5/22/2024		5/22/2024	
Sample ID				LORNG_MMW0004_05202024		LORNG_MMW0007B_05172024		LORNG_MMW0017_05202024		LORNG_MMW0330_05212024		LORNG_MMW0423_05172024		LORNG_OW05004_05222024		LORNG_OW10005_05202024		LORNG_OW14004_05172024		LORNG_OW17002_05222024		LORNG_OW17003_05222024	
QC Code				N		N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	19	U	18	U	18	U	20	U	19	U	20	U	19	U	21	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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			SDG		
			Location		OW20006
			Sample Date		5/20/2024
			Sample ID		LORNG_OW20006_05202024
			QC Code		N
Class	Fraction	Analyte Name	Units	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	7.6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	15.8	
		Perfluorohexanoic acid (PFHxA)	NG/L	15.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	16.2	
		Perfluorooctanoic acid (PFOA)	NG/L	17.5	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.3	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	86	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2.2	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	94.8	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	0.8	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U

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		SDG		
		Location		OW20006
		Sample Date		5/20/2024
		Sample ID		LORNG_OW20006_05202024
		QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U

Notes:
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J = Concentration is estimated
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UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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			SDG	FC15912														FC15948A					
			Location	OW20007		OW21005				RFW1144		UNK-042		UNK-044		BW07001		BW07002		BW09001		JMW0683	
			Sample Date	5/20/2024		5/21/2024				5/21/2024		5/20/2024		5/21/2024		5/23/2024		5/23/2024		5/23/2024		5/23/2024	
			Sample ID	LORNG_OW20007_05202024		LORNG_OW21005_05212024		LORNG_OW21005_05212024FD		LORNG_RFW1144_05212024		LORNG_UNK-042_05202024		LORNG_UNK-044_05212024		LORNG_BW07001_05232024		LORNG_BW07002_05232024		LORNG_BW09001_05232024		LORNG_JMW0683_05232024	
			QC Code	N		N		FD		N		N		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6	J	2.2	J	2.1	J	8.8	J	6.5	J	2.7	J	18		15.9		8.5	J	7.5	J
		Perfluoropentanoic acid (PFPeA)	NG/L	10.3		2.6	J	2.8	J	15.2		19.9		2.6	J	38.3		48.9		22.5		8.3	
		Perfluorohexanoic acid (PFHxA)	NG/L	8.9		2.8	J	3.2	J	9.4		18		22.5		26.5		40.6		30.5		14.1	
		Perfluoroheptanoic acid (PFHpA)	NG/L	9.1		1.4	J	1.6	J	6.3		8.6		4.2		20.3		20.7		10.8		5.6	
		Perfluorooctanoic acid (PFOA)	NG/L	10.1		1.5	J	1.6	J	7.5		15.2		32.9		26.2		41.8		30.1		19.1	
		Perfluorononanoic acid (PFNA)	NG/L	0.88	J	1.9	U	1.9	U	0.81	J	0.94	J	0.9	J	5		2.3	J	0.99	J	1.1	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2.3	J	0.87	J	0.96	J	1.8	J	3.4	J	1.5	J	5.4		8.9		4.2		3.1	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.9	J	3.7	U	3.7	U	2.3	J	4.6	J	2	J	8.8		10.4		5.2		4.6	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	57		10.8		10.9		28.6		67.5		102		93.4		200		175		80.6	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.4	J	1.9	U	1.9	U	0.69	J	1.8	J	1.6	J	3.5	J	6.1		2.1	J	4.3	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	50.6		3.6	J	3.9		36.2		52.5		27.1		126		116		62.7		183	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.5	U	7.4	U	7.8	U	7.7	U	7.4	U	7.4	U	7.3	U	7.5	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.5	U	7.4	U	7.8	U	7.7	U	7.4	U	7.4	U	34.5		7.5	U	7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.5	U	7.4	U	7.8	U	7.7	U	7.4	U	7.4	U	7.3	U	7.5	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	0.94	J	1.9	U	1.9	U	1.2	J	2.8	J	3.1	J	2	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	UJ	3.7	UJ	3.7	UJ	3.9	UJ	3.8	UJ	3.7	UJ	3.7	U	3.6	UJ	3.8	UJ	3.7	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	UJ	3.8	UJ	3.7	UJ
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	18	UJ	19	UJ	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	18	UJ	19	UJ	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.7	U	3.7	U	3.9	U	3.8	U	3.7	U	3.7	U	3.6	U	3.8	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.3	U	9.3	U	9.7	U	9.6	U	9.3	U	9.3	U	9.1	U	9.4	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U	19	U	19	U	19	U	19	U	18	U	19	U	19	U

Prepared by: AKN
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Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC15912												FC15948A				
			Location	OW20007		OW21005			RFW1144		UNK-042		UNK-044		BW07001		BW07002		BW09001		JMW0683	
			Sample Date	5/20/2024		5/21/2024			5/21/2024		5/20/2024		5/21/2024		5/23/2024		5/23/2024		5/23/2024		5/23/2024	
			Sample ID	LORNG_OW20007_05202024		LORNG_OW21005_05212024		LORNG_OW21005_05212024FD	LORNG_RFW1144_05212024		LORNG_UNK-042_05202024		LORNG_UNK-044_05212024		LORNG_BW07001_05232024		LORNG_BW07002_05232024		LORNG_BW09001_05232024		LORNG_JMW0683_05232024	
			QC Code	N		N		FD	N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19 U	19	U	19	U	19	U	19	U	18	U	19	U	19	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
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UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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			SDG		
			Location	MMW3402R	
			Sample Date	5/23/2024	
			Sample ID	LORNG_MMW3402R_05232024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	21.9	
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U
		Perfluorohexanoic acid (PFHxA)	NG/L	6.5	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.1	
		Perfluorooctanoic acid (PFOA)	NG/L	9.9	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	J
		Perfluorodecanoic acid (PFDA)	NG/L	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.3	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.9	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	23.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	0.87	J
		Perfluorooctanesulfonic acid (PFOS)	NG/L	14.8	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.9	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	78	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	78	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.9	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.9	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.9	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.9	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.9	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.9	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.9	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.9	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.9	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.8	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	
			Location	MMW3402R
			Sample Date	5/23/2024
			Sample ID	LORNG_MMW3402R_05232024
			QC Code	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20 U

Notes:
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NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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			SDG	FC15948A								FC16137									
			Location	OW09001		RFW1147		USGS2				BW01009	BW06007			BW13001		JBW7215B			
			Sample Date	5/23/2024		5/23/2024		5/23/2024				5/24/2024	6/3/2024			6/3/2024		6/3/2024			
			Sample ID	LORNG_OW09001_05232024		LORNG_OW09001_05232024FD		LORNG_RFW1147_05232024		LORNG_USGS2_40_05232024		LORNG_USGS2_125_05232024	LORNG_BW01009_05242024		LORNG_BW06007_06032024		LORNG_BW06007_06032024FD		LORNG_BW13001_06032024		LORNG_JBW7215B_06032024	
			QC Code	N		FD		N		N		N	N		N		FD		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6.6	J	7.1	J	13.6	J	10.2	J	11.1	J	16		72.1		72.8		3.6	U	5	J
		Perfluoropentanoic acid (PFPeA)	NG/L	12.5		13.3		28		19.3		21		44		244		245		1.8	U	9	
		Perfluorohexanoic acid (PFHxA)	NG/L	18.6		21		27.3		12.4		20		43.6		133		134		0.84	J	6.4	
		Perfluoroheptanoic acid (PFHpA)	NG/L	7.3		8.1		16		8.5		9.4		26.2		147		145		0.56	J	5.2	
		Perfluorooctanoic acid (PFOA)	NG/L	16.9		18.4		27.2		13.3		23.7		37.5		73.2		71.9		0.63	J	4.3	
		Perfluorononanoic acid (PFNA)	NG/L	0.8	J	0.7	J	3.4	J	0.89	J	1.1	J	2.2	J	14.7		16.3		1.8	U	0.93	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.1	J	1.1	J	1.8	U	2	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	3.2	J	3.5	J	4.2		2.6	J	3.2	J	6.8		7.8		7.9		1.8	U	1.4	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4.1	J	4.5		6.7		3.1	J	3.9	J	7.9		10.4		11.2		3.6	U	1.6	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	126		140		171		53.5		78.1		140		82.5		86.8		3.7		19.9	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.6	J	2.1	J	3.6		1.6	J	2.3	J	3.9		3.7		3.7		1.8	U	2	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	48.3		55.4		200		59.8		89.7		158		135		142		8.4		22.6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1	J	1.9	U	1.9	U	1.9	U	0.62	J	0.66	J	1.8	U	2	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	0.62	J	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.3	U	7.3	U	7.4	U	7.5	U	7.5	U	7.4	U	7.4	U	7.1	U	8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.3	U	7.3	U	7.4	U	6.1	J	24.2		198		201		7.1	U	8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.3	U	7.3	U	7.4	U	7.5	U	11.1	J	55.2		57.1		7.1	U	8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	J	2.3	J	8.7		1.9	J	4.2		2.9	J	2.9	J	2.7	J	1.8	U	2	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.6	U	3.6	UJ	3.7	UJ	3.8	UJ	3.8	UJ	3.7	UJ	3.7	UJ	3.6	UJ	4	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.6	U	3.6	UJ	3.7	UJ	3.8	UJ	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ	18	UJ	18	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	18	UJ	20	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ	18	UJ	18	UJ	19	UJ	19	UJ	19	UJ	19	UJ	19	UJ	18	UJ	20	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.7	U	3.7	U	3.6	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.1	U	9.1	U	9.3	U	9.4	U	9.4	U	9.3	U	9.3	U	8.9	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	18	U	19	U	19	U	19	U	19	U	19	U	18	U	20	U

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			SDG	FC15948A					FC16137				
			Location	OW09001		RFW1147	USGS2		BW01009	BW06007		BW13001	JBW7215B
			Sample Date	5/23/2024		5/23/2024	5/23/2024		5/24/2024	6/3/2024		6/3/2024	6/3/2024
			Sample ID	LORNG_OW09001_05232024	LORNG_OW09001_05232024FD	LORNG_RFW1147_05232024	LORNG_USGS2_40_05232024	LORNG_USGS2_125_05232024	LORNG_BW01009_05242024	LORNG_BW06007_06032024	LORNG_BW06007_06032024FD	LORNG_BW13001_06032024	LORNG_JBW7215B_06032024
			QC Code	N	FD	N	N	N	N	N	FD	N	N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	18 U	20 U

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			SDG		
			Location		JBW7336A
			Sample Date		6/3/2024
			Sample ID		LORNG_JBW7336A_06032024
			QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6	J
		Perfluoropentanoic acid (PFPeA)	NG/L	5.7	J
		Perfluorohexanoic acid (PFHxA)	NG/L	4.4	
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.2	J
		Perfluorooctanoic acid (PFOA)	NG/L	4.1	
		Perfluorononanoic acid (PFNA)	NG/L	0.58	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.2	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.4	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	21.1	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	16.3	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

		SDG		
		Location		JBW7336A
		Sample Date		6/3/2024
		Sample ID		LORNG_JBW7336A_06032024
		QC Code		N
Class	**Fraction**	**Analyte Name**	**Units**	Result Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18 U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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Data Validation Report
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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

				SDG	FC16137													
				Location	JBW7348		JBW7738B	JMW0880	JPZ0348	MMW0020		OW08002		OW12002				
				Sample Date	6/3/2024		5/24/2024	6/3/2024	5/24/2024	6/3/2024		5/24/2024		5/24/2024				
				Sample ID	LORNG_JBW7348_06032024		LORNG_JBW7738B_05242024	LORNG_JMW0880_06032024	LORNG_JPZ0348_05242024	LORNG_MMW0020_60_06032024		LORNG_MMW0020_150_06032024		LORNG_OW08002_05242024		LORNG_OW08002_05242024FD		LORNG_OW12002_05242024	
				QC Code	N		FD	N	N	N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.6	J	3.5	J	7.9	J	2.3	J	6.9	J	3.7	U	3.7	U	14.2	J	14	J	9.9	J
		Perfluoropentanoic acid (PFPeA)	NG/L	5.2	J	5	J	19.7		1.2	J	17		1.9	U	1.9	U	43.8		42.8		28.2	
		Perfluorohexanoic acid (PFHxA)	NG/L	6		5.5		30.7		3	J	24.8		1.9	U	1.9	U	52.7		52.9		23.9	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.2		4		8.2		0.98	J	9.3		1.9	U	1.9	U	19.5		18.3		15.5	
		Perfluorooctanoic acid (PFOA)	NG/L	5.5		4.9		10.5		2.9	J	25.7		0.53	J	0.48	J	56.7		55.8		16.9	
		Perfluorononanoic acid (PFNA)	NG/L	0.61	J	1.9	U	1.8	U	1.9	U	1.1	J	1.9	U	1.9	U	2.6	J	2.2	J	2.1	J
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.5	J	1.4	J	13.2		1.9	U	3.8		1.9	U	1.9	U	7.9		7.6		6.9	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.9	J	1.7	J	15.4		3.8	U	4.8		3.7	U	3.7	U	10.9		11		11.5	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	20.6		18.6		92.5		5.5		155		1.9	U	0.94	J	211		203		118	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	5.4		1.9	U	2	J	1.9	U	1.9	U	5.6		4.6		7.6	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	20		18.2		159		11.8		75.8		1.9	U	1.9	U	211		193		363	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	0.65	J	0.64	J	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.7	U	7.3	U	7.5	U	7.3	U	7.4	U	7.4	U	7.4	U	7.3	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.7	U	7.3	U	7.5	U	7.3	U	7.4	U	7.4	U	6.2	J	6.5	J	20.4	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.7	U	7.3	U	7.5	U	7.3	U	7.4	U	7.4	U	7.4	U	7.3	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	2.7	J	1.9	U	1.9	U	8.4	J	8		1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	UJ	3.8	UJ	3.6	UJ	3.8	UJ	3.6	UJ	3.7	UJ	3.7	UJ	3.7	UJ	3.6	UJ	3.7	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	UJ	19	UJ	18	UJ	19	UJ	18	UJ	19	UJ	19	UJ	19	UJ	18	UJ	19	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	UJ	19	UJ	18	UJ	19	UJ	18	UJ	19	UJ	19	UJ	19	UJ	18	UJ	19	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.6	U	9.1	U	9.4	U	9.1	U	9.3	U	9.3	U	9.3	U	9.1	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U	18	U	19	U

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Data Validation Report
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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG				FC16137																	
Location				JBW7348				JBW7738B		JMW0880		JPZ0348		MMW0020				OW08002				OW12002	
Sample Date				6/3/2024				5/24/2024		6/3/2024		5/24/2024		6/3/2024				5/24/2024				5/24/2024	
Sample ID				LORNG_JBW7348_06032024		LORNG_JBW7348_06032024FD		LORNG_JBW7738B_05242024		LORNG_JMW0880_06032024		LORNG_JPZ0348_05242024		LORNG_MMW0020_60_06032024		LORNG_MMW0020_150_06032024		LORNG_OW08002_05242024		LORNG_OW08002_05242024FD		LORNG_OW12002_05242024	
QC Code				N		FD		N		N		N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	19	U	18	U	19	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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			SDG		
			Location	UNK-TC01	
			Sample Date	6/3/2024	
			Sample ID	LORNG_UNK-TC01_06032024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6.7	J
		Perfluoropentanoic acid (PFPeA)	NG/L	6.1	J
		Perfluorohexanoic acid (PFHxA)	NG/L	6.2	
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.2	
		Perfluorooctanoic acid (PFOA)	NG/L	2.5	J
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.72	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	11.2	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	19.3	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U

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			SDG		
			Location	UNK-TC01	
			Sample Date	6/3/2024	
			Sample ID	LORNG_UNK-TC01_06032024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U

Notes:
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NG/L = nanograms per liter
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		SDG		FC16207							FC16236		
		Location		AA18MW-01	FIELDQC		JMW1565	JPZ0342	OW07002	USMW003	AA11MW-01	AA11MW-02	BW12006
		Sample Date		6/4/2024	6/3/2024		6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024
		Sample ID		LORNG_AA18MW-01_06042024	LORNG_EB019_06032024	LORNG_EB020_06032024	LORNG_JMW1565_06042024	LORNG_JPZ0342_06042024	LORNG_OW07002_06042024	LORNG_USMW003_06042024	LORNG_AA11MW-01_06042024	LORNG_AA11MW-02_06042024	LORNG_BW12006_06042024
		QC Code		N	EB	EB	N	N	N	N	N	N	N
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	6 J	3.6 U	4.1 U	1210	18.7	21.4	3.8 U	6.6 J	9.4 J	11.7 J
		Perfluoropentanoic acid (PFPeA)	NG/L	13.1	1.8 U	2 U	207	67.3	59	1.9 U	15.9	23.9	36.8
		Perfluorohexanoic acid (PFHxA)	NG/L	39.3	1.8 U	2 U	165	78.9	44.3	1.9 U	24.1	35.2	44.9
		Perfluoroheptanoic acid (PFHpA)	NG/L	7.7	1.8 U	2 U	101	25.3	30.9	1.9 U	8.9	12.8	19.9
		Perfluorooctanoic acid (PFOA)	NG/L	47.6	0.89 U	1 U	127	88.7	40.2	0.94 U	9.8	15.2	24.4
		Perfluorononanoic acid (PFNA)	NG/L	0.82 J	1.8 U	2 U	16.9	3.2 J	7.8	1.9 U	0.57 J	1.1 J	2.1 J
		Perfluorodecanoic acid (PFDA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	5.6	1.8 U	2 U	17.1	13.5	9.9	1.9 U	10.3	13.4	15.7
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	6.2	3.6 U	4.1 U	15.2	14.2	13.6	3.8 U	13.4	17.7	21.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	183	1.8 U	2 U	222	305	162	1.1 J	88.8	127	163
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	3 J	1.8 U	2 U	4	7	5.4	1.9 U	5.9	7.6	14.2
		Perfluorooctanesulfonic acid (PFOS)	NG/L	104	0.91 J	2 U	110	233	210	1.2 J	179	305	546
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	0.71 J	1.9 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8 UJ	1.8 U	2 U	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ	1.8 U	1.9 U	1.9 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3 U	7.1 U	8.2 U	7.8 U	7.3 U	7.3 U	7.5 U	7.3 U	7.4 U	7.4 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3 U	7.1 U	8.2 U	16.9 J	45.6	7.3 U	7.5 U	7.3 U	7.4 U	45.4
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3 U	7.1 U	8.2 U	7.8 U	7.3 U	7.3 U	7.5 U	7.3 U	7.4 U	7.4 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	12.1	1.8 U	2 U	1.5 J	6.5	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 UJ	3.7 UJ	3.7 UJ
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18 UJ	18 U	20 U	20 UJ	18 UJ	18 UJ	19 UJ	18 UJ	190 UJ	19 UJ
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18 UJ	18 U	20 U	20 UJ	18 UJ	18 UJ	19 UJ	18 UJ	190 UJ	19 UJ
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6 U	3.6 U	4.1 U	3.9 U	3.6 U	3.6 U	3.8 U	3.6 U	3.7 U	3.7 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8 U	1.8 U	2 U	2 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1 U	8.9 U	10 U	9.8 U	9.1 U	9.1 U	9.4 U	9.1 U	9.3 U	9.3 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18 U	18 U	20 U	20 U	18 U	18 U	19 U	18 U	19 U	19 U

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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC16207														FC16236		
			Location	AA18MW-01		FIELDQC		JMW1565		JPZ0342		OW07002		USMW003		AA11MW-01		AA11MW-02		BW12006	
			Sample Date	6/4/2024		6/3/2024		6/4/2024		6/4/2024		6/4/2024		6/4/2024		6/4/2024		6/4/2024		6/4/2024	
			Sample ID	LORNG_AA18MW-01_06042024		LORNG_EB019_06032024		LORNG_EB020_06032024		LORNG_JMW1565_06042024		LORNG_JPZ0342_06042024		LORNG_OW07002_06042024		LORNG_USMW003_06042024		LORNG_AA11MW-01_06042024		LORNG_AA11MW-02_06042024		LORNG_BW12006_06042024	
			QC Code	N		EB		EB		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	20	U	20	U	18	U	18	U	19	U	18	UJ	19	UJ	19	UJ

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG					FC16337															
			Location	JBW7753A		OW08001		AA20MW-01		ASMW101		BW01005		BW05009		BW06005		BW18008		BW20002			
			Sample Date	6/5/2024		6/5/2024		6/7/2024		6/7/2024		6/7/2024		6/6/2024		6/6/2024		6/6/2024		6/6/2024		6/6/	
			Sample ID	LORNG_JBW7753A_06052024		LORNG_OW08001_06052024		LORNG_AA20MW-01_06072024		LORNG_ASMW101_06072024		LORNG_BW01005_06072024		LORNG_BW05009_06062024		LORNG_BW06005_06062024		LORNG_BW18008_06062024		LORNG_BW20002_06062024		LORNG_EB021_06062024	
			QC Code	N		N		N		N		N		N		N		N		N		EB	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	7.4	J	23.8		4.4	J	5.9	J	17.2		148		17.5		3.7	U	5.1	J	3.7	U
		Perfluoropentanoic acid (PFPeA)	NG/L	16		89.1		4.6	J	9.7		43.2		552		40.3		1.9	U	9.5		1.8	U
		Perfluorohexanoic acid (PFHxA)	NG/L	21.4		88.7		15.1		9.4		47.5		356		24.1		1.5	J	8.9		1.8	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	14		34.3		3.7		6.4		21.3		203		25.9		0.97	J	7.3		1.8	U
		Perfluorooctanoic acid (PFOA)	NG/L	18		85.4		8.3		5.6		52.8		226		18.1		2.3	J	8.7		0.92	U
		Perfluorononanoic acid (PFNA)	NG/L	2.2	J	3.6	J	1.2	J	1.1	J	3.8		51.1		3.2	J	1.9	U	0.65	J	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.3	J	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	7.2		13.1		13.8		1.8	J	7.3		93.6		3.9		0.52	J	1.7	J	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	10.5		19.6		31.8		2.2	J	11.1		145		5.5		3.7	U	2.3	J	3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	102		344		450		33.6		227		1080		50.9		25.5		36.3		1.8	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	5.9		9.1		19.9		1.9	U	7.4		77.3		2.4	J	1.9	U	1.8	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	327		262		1240		30.2		302		2450		107		21.2		26.5		0.51	J
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.3	J	1.8	U	1.9	U	1.9	U	1.8	U	3.7	J	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.3	U	7.4	U	7.5	U	7.3	U	7.8	U	7.3	U	7.5	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	5.1	J	12.3	J	7.4	U	7.5	U	73.7		633		22.9		7.5	U	7.3	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.3	U	7.4	U	7.5	U	7.3	U	79.7		12.8	J	7.5	U	7.3	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	J	4.4	J	1.9	U	1.9	U	8.7		12.2		1.8	J	0.76	J	1.8	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	UJ	3.7	UJ	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	180	UJ	18	UJ	19	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	180	UJ	180	UJ	19	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.7	U	3.7	U	3.7	U	3.7	U	3.9	U	3.7	U	3.7	U	3.6	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.8	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9.2	U	9.3	U	9.3	U	9.2	U	9.7	U	9.2	U	9.3	U	9.1	U	9.2	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	19	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG				FC16337																
			Location	JBW7753A		OW08001		AA20MW-01		ASMW101		BW01005		BW05009		BW06005		BW18008		BW20002			
			Sample Date	6/5/2024		6/5/2024		6/7/2024		6/7/2024		6/7/2024		6/6/2024		6/6/2024		6/6/2024		6/6/2024		6/6/	
			Sample ID	LORNG_JBW7753A_06052024		LORNG_OW08001_06052024		LORNG_AA20MW-01_06072024		LORNG_ASMW101_06072024		LORNG_BW01005_06072024		LORNG_BW05009_06062024		LORNG_BW06005_06062024		LORNG_BW18008_06062024		LORNG_BW20002_06062024		LORNG_EB021_06062024	
			QC Code	N		N		N		N		N		N		N		N		N		EB	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	UJ	18	UJ	19	U	19	U	18	U	19	U	18	U	19	U	18	U	18	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG							
			Location	FIELDQC						
			Sample Date	2024		6/7/2024				
			Sample ID	LORNG_EB022_06062024		LORNG_EB023_06072024		LORNG_EB024_06072024		
			QC Code	EB		EB		EB		
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	3.7	U	3.8	U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorooctanoic acid (PFOA)	NG/L	0.94	U	0.93	U	0.94	U	
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	3.7	U	3.8	U	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.7	U	3.8	U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.4	U	7.5	U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.4	U	7.5	U	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.4	U	7.5	U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.7	U	3.8	U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	U	3.7	U	3.8	U	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.7	U	3.8	U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.7	U	3.8	U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	19	U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	19	U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.7	U	3.8	U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U	
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.7	U	3.8	U	
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.7	U	3.8	U	
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.7	U	3.8	U	
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.7	U	3.8	U	
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U	
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.3	U	9.4	U	
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U	

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG											
Location				FIELDQC							
Sample Date				2024		6/7/2024					
Sample ID				LORNG_EB022_06062024		LORNG_EB023_06072024		LORNG_EB024_06072024			
QC Code				EB		EB		EB			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier		
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U		

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC16337																	
			Location	FMW3413		JBW7304		JBW7335A		JBW7335B		JBW7912				JMW0882				JMW0980		JMW1665	
			Sample Date	6/6/2024		6/7/2024		6/6/2024		6/6/2024		6/7/2024				6/6/2024				6/7/2024		6/7/2024	
			Sample ID	LORNG_FMW3413_06062024		LORNG_JBW7304_06072024		LORNG_JBW7335A_06062024		LORNG_JBW7335B_06062024		LORNG_JBW7912_46_06072024		LORNG_JBW7912_150_06072024		LORNG_JMW0882_06062024		LORNG_JMW0882_06062024FD		LORNG_JMW0980_06072024		LORNG_JMW1665_06072024	
			QC Code	N		N		N		N		N		N		N		FD		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	5.1	J	6.2	J	5.6	J	4.9	J	9.7	J	8.9	J	3.7	U	1.9	J	3.8	U	4	J
		Perfluoropentanoic acid (PFPeA)	NG/L	9.8		12.9		9		8.1		23.7		15.4		2.2	J	1.8	J	1.9	J	5	J
		Perfluorohexanoic acid (PFHxA)	NG/L	7.3		9.4		6.9		6.3		16.1		10.5		2.8	J	2.9	J	6		5.3	
		Perfluoroheptanoic acid (PFHpA)	NG/L	6.8		5.9		5.3		4.9		13.1		9.2		1.6	J	1.5	J	2.7	J	3.6	J
		Perfluorooctanoic acid (PFOA)	NG/L	4.6		4.7		5.6		5.4		8.6		7.3		9.8		9.6		11.4		4.6	
		Perfluorononanoic acid (PFNA)	NG/L	0.86	J	1.9	U	0.61	J	1.9	U	1.1	J	0.74	J	0.62	J	1.8	U	1.9	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	0.97	J	1.6	J	1.5	J	1.6	J	2.1	J	1.7	J	0.81	J	0.7	J	1.4	J	1.7	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	1.2	J	2.1	J	2.1	J	2.2	J	2.7	J	2.5	J	3.7	U	3.7	U	1.4	J	2.7	J
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	14.5		22.9		24.4		21.2		30.8		27		10.3		10.4		5.1		28.5	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	0.79	J	0.67	J	1.9	U	0.83	J	0.79	J	1.1	J	0.8	J	1.9	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	15.7		25.7		22.4		20.3		33.2		42.3		31.1		31.4		39.6		24.9	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.6	U	7.5	U	7.4	U	7.3	U	7.2	U	7.5	U	7.3	U	7.6	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.6	U	7.5	U	7.4	U	7.3	U	7.2	U	7.5	U	7.3	U	7.6	U	7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.6	U	7.5	U	7.4	U	7.3	U	7.2	U	7.5	U	7.3	U	7.6	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	2.4	J	0.63	J
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	0.98	J	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	4.3	J	3.5	J	6.9		3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	19	U	19	U	18	U	18	U	19	U	18	U	19	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	19	U	19	U	18	U	18	U	19	U	18	U	19	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.8	U	3.7	U	3.7	U	3.6	U	3.6	U	3.7	U	3.7	U	3.8	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.5	U	9.3	U	9.3	U	9.1	U	9	U	9.3	U	9.2	U	9.5	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	19	U	19	U	18	U	18	U	19	U	18	U	19	U	19	U

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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG	FC16337																	
			Location	FMW3413		JBW7304		JBW7335A		JBW7335B		JBW7912				JMW0882				JMW0980		JMW1665	
			Sample Date	6/6/2024		6/7/2024		6/6/2024		6/6/2024		6/7/2024				6/6/2024				6/7/2024		6/7/2024	
			Sample ID	LORNG_FMW3413_06062024		LORNG_JBW7304_06072024		LORNG_JBW7335A_06062024		LORNG_JBW7335B_06062024		LORNG_JBW7912_46_06072024		LORNG_JBW7912_150_06072024		LORNG_JMW0882_06062024		LORNG_JMW0882_06062024FD		LORNG_JMW0980_06072024		LORNG_JMW1665_06072024	
			QC Code	N		N		N		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	19	U	19	U	18	U	18	U	19	U	18	U	19	U	19	U

Notes:

N = Normal Field Sample

FD = Field Duplicate

EB = Equipment Blank

J = Concentration is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected and the associated detection limits are estimated

NG/L = nanograms per liter

PFAS = Per and Polyfluoroalkyl Substance

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

			SDG			FC16337										
			Location	JMW1684		JMW1982		OW05002			OW05003					
			Sample Date	6/6/2024		6/6/2024		6/6/2024			6/6/2024					
			Sample ID	LORNG_JMW1684_06062024	LORNG_JMW1684_06062024FD	LORNG_JMW1982_06062024		LORNG_OW05002_06062024		LORNG_OW05002_06062024FD	LORNG_OW05003_06062024		LORNG_OW05003_06062024FD			
			QC Code	N	FD	N		N		FD	N		FD			
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	J	3.9	J	11.8	J	30.7		29.9		12.4	J	11.9 J
		Perfluoropentanoic acid (PFPeA)	NG/L	7.7		7.7		33.3		120		116		36.6		34.3
		Perfluorohexanoic acid (PFHxA)	NG/L	8		8		99.2		124		123		22.1		19.9
		Perfluoroheptanoic acid (PFHpA)	NG/L	4.6		4.4		24.8		68.2		66.5		20.8		19.3
		Perfluorooctanoic acid (PFOA)	NG/L	4.8		4.6		111		134		133		20.1		18.7
		Perfluorononanoic acid (PFNA)	NG/L	1.8	U	1.8	U	4.1		24		23.8		6.3		6
		Perfluorodecanoic acid (PFDA)	NG/L	1.8	U	1.8	U	0.64	J	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.7	J	1.9	J	12.3		83.4		81.1		7.3		7.5
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.7	J	2.7	J	18.8		130		128		13.5		13.4
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	24.4		24.8		522		1100		919		152		146
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.8	U	0.68	J	14.4		25.3		25.2		8.4		7.8
		Perfluorooctanesulfonic acid (PFOS)	NG/L	30.1		29.5		844		885		998		521		529
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.8	U	1.8	U	1.1	J	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.3	U	7.2	U	7.4	U	7.6	U	7.6	U	7.7	U	7.4 U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.3	U	7.2	U	11	J	108		115		7.6	J	6.9 J
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.3	U	7.2	U	7.4	U	7.3	J	6.4	J	7.7	U	7.4 U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.8	U	1.8	U	11.9		1.8	J	1.8	J	1.9	U	1.9 U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	18	U	18	U	19	U	19	U	19	U	19	U	19 U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	18	U	18	U	19	U	19	U	19	U	19	U	19 U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.6	U	3.6	U	3.7	U	3.8	U	3.8	U	3.8	U	3.7 U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.8	U	1.8	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9 U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.1	U	9	U	9.3	U	9.5	U	9.5	U	9.6	U	9.3 U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	18	U	18	U	19	U	19	U	19	U	19	U	19 U

Prepared by: AKN
Date: 9/5/24
Checked by: MDS
Date: 9/11/2024

Table 2 - Summary of Analytical Results
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG						FC16337											
Location				JMW1684		JMW1982		OW05002				OW05003					
Sample Date				6/6/2024		6/6/2024		6/6/2024				6/6/2024					
Sample ID				LORNG_JMW1684_06062024		LORNG_JMW1684_06062024FD		LORNG_JMW1982_06062024		LORNG_OW05002_06062024		LORNG_OW05002_06062024FD		LORNG_OW05003_06062024		LORNG_OW05003_06062024FD	
QC Code				N		FD		N		N		FD		N		FD	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	18	U	18	U	19	U	19	U	19	U	19	U	19	U

Notes:
N = Normal Field Sample
FD = Field Duplicate
EB = Equipment Blank
J = Concentration is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected and the associated detection limits are estimated
NG/L = nanograms per liter
PFAS = Per and Polyfluoroalkyl Substance
SDG = Sample Delivery Group

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Table 3 - Data Qualification Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15432	E1633DR	T	FC15432-1	LORNG_044-RW01_05032024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-8	LORNG_BW05006_05022024	Perfluorooctanoic acid (PFOA)	1	J	1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.8	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.7	J	1.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15432-2	LORNG_BW18003_05032024	Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-3	LORNG_BW18007_05032024	Perfluorooctanoic acid (PFOA)	0.85	J	0.85	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.6	J	2.6	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.2	J	2.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15432-9	LORNG_EBGB_BW001_05022024	Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.5	J	0.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.59	J	0.59	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-4	LORNG_EBGB_OW002_05032024	Perfluorohexanoic acid (PFHxA)	0.75	J	0.75	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.2	J	2.2	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15432-10	LORNG_JBW7105_05022024	Perfluoropentanoic acid (PFPeA)	3.1	J	3.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.72	J	0.72	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.79	J	0.79	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.68	J	0.68	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.6	J	2.6	J	TR	NG/L

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Table 3 - Data Qualification Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15432	E1633DR	T	FC15432-10	LORNG_JBW7105_05022024	Perfluorooctanesulfonic acid (PFOS)	0.87	J	0.87	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-5	LORNG_JBW7107_05022024	Perfluorohexanoic acid (PFHxA)	0.6	J	0.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.61	J	0.61	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.81	J	0.81	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15432-6	LORNG_JBW7327_45_05022024	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.4	J	3.4	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-7	LORNG_JBW7327_45_05022024FD	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR, IAG	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.5	J	3.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15432-11	LORNG_JMW3102_05022024	Perfluoroheptanoic acid (PFHpA)	2.4	J	2.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	J	2	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.97	J	0.97	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15432-12	LORNG_USMW004_05022024	Perfluorohexanesulfonic acid (PFHxS)	0.75	J	0.75	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
FC15647	E1633DR	T	FC15647-6	LORNG_BB_BW001_05092024	Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.2	J	3.2	J	TR	NG/L

Table 3 - Data Qualification Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
FC15647	E1633DR	T	FC15647-1	LORNG_BB_OW002_05092024	Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-13	LORNG_BW17004_05102024	Perfluoropentanoic acid (PFPeA)	2.8	J	2.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.3	J	2.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15647-15	LORNG_JBW7203A_05102024	Perfluorobutanoic acid (PFBA)	6.2	J	6.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.85	J	0.85	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15647-8	LORNG_JMW0681_05092024	Perfluorobutanoic acid (PFBA)	2.9	J	2.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.9	J	1.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-2	LORNG_JMW0991_05092024	Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.4	J	2.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1	J	1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-3	LORNG_JMW7913_05092024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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Checked by: MDS
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Table 3 - Data Qualification Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15647	E1633DR	T	FC15647-4	LORNG_JMW7916_05092024	Perfluorobutanoic acid (PFBA)	5.1	J	5.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.7	J	0.7	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.7	U	3.7	UJ	IVD	NG/L
			FC15647-9	LORNG_JPZ0686_05092024	Perfluorohexanoic acid (PFHxA)	0.57	J	0.57	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.82	J	0.82	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.55	J	0.55	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.1	J	2.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-5	LORNG_LF3MW4_05092024	Perfluorobutanoic acid (PFBA)	2.9	J	2.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.3	J	2.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.4	J	3.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15647-10	LORNG_OW16002_05092024	Perfluorobutanoic acid (PFBA)	3.8	J	3.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.2	J	5.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.2	J	2.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.9	J	2.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.58	J	0.58	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.1	J	1.1	J	IAG, TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L

Table 3 - Data Qualification Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15647	E1633DR	T	FC15647-16	LORNG_OW20002_05102024	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.4	J	4.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.6	J	2.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-17	LORNG_OW23001_05102024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.91	J	0.91	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15647-18	LORNG_SB/OW16001_05092024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.1	J	5.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.82	J	0.82	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15647-19	LORNG_SB/OW16001_05092024FD	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5	J	5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.73	J	0.73	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15647-11	LORNG_USMW025_05092024	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.9	J	2.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	TR	NG/L

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Data Validation Report
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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15647	E1633DR	T	FC15647-11	LORNG_USMW025_05092024	Perfluoroheptanoic acid (PFHpA)	2.1	J	2.1	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.51	J	0.51	J	TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.73	J	0.73	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15647-12	LORNG_USMW025_05092024FD	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.9	J	2.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3	J	3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2	J	2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.7	J	3.7	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.54	J	0.54	J	TR	NG/L
					Perfluoroundecanoic acid (PFUnA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.78	J	0.78	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
FC15852	E1633DR	T	FC15852-21	LORNG_043-MW03_05172024	Perfluorobutanoic acid (PFBA)	5.2	J	5.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.6	J	3.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.9	J	1.9	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.1	J	3.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.93	J	0.93	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	24	U	24	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	24	U	24	UJ	IVD	NG/L

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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-15	LORNG_AA18MW-02_05162024	Perfluorobutanoic acid (PFBA)	3.7	J	3.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.1	J	6.1	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.9	J	3.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.7	J	2.7	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2	J	2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.89	J	0.89	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.8	J	3.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15852-8	LORNG_BW01006_05162024	Perfluorobutanoic acid (PFBA)	6.5	J	6.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.5	J	1.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2	J	2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-1	LORNG_BW14005_05162024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.7	J	2.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-9	LORNG_BW17005_05162024	Perfluorobutanoic acid (PFBA)	8.7	J	8.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.77	J	0.77	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9	J	1.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-2	LORNG_BW18009_05162024	Perfluorobutanoic acid (PFBA)	2.9	J	2.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.97	J	0.97	J	IAG, TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.95	J	0.95	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.75	J	0.75	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	UJ	IVD	NG/L
			FC15852-22	LORNG_JBW7316_05172024	Perfluorobutanoic acid (PFBA)	3.4	J	3.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4	J	4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.3	J	3.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.6	J	2.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-16	LORNG_JBW7710_05162024	Perfluorobutanoic acid (PFBA)	6.9	J	6.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L
			FC15852-23	LORNG_JMW0961_05172024	Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.5	J	2.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	UJ	IVD	NG/L
			FC15852-17	LORNG_JMW1981_05162024	Perfluorobutanoic acid (PFBA)	4.2	J	4.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.95	J	0.95	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15852-11	LORNG_JPZ0349_05162024	Perfluoropentanoic acid (PFPeA)	4.4	J	4.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.95	J	0.95	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-11	LORNG_JPZ0349_05162024	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-24	LORNG_JPZ1780_05172024	Perfluorobutanoic acid (PFBA)	5.4	J	5.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.57	J	0.57	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-3	LORNG_LF2MW1_05162024	Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	UJ	IVD	NG/L
			FC15852-4	LORNG_LF3MW3_05162024	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L
			FC15852-5	LORNG_LF3MW3_05162024FD	Perfluoroheptanoic acid (PFHpA)	0.74	J	0.74	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.66	J	0.66	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.64	J	0.64	J	IAG,TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-6	LORNG_MMW0010_05162024	Perfluorobutanoic acid (PFBA)	7.3	J	7.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.6	J	3.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.7	J	3.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	J	1.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15852-7	LORNG_MMW0010_05162024FD	Perfluorobutanoic acid (PFBA)	7.1	J	7.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.2	J	4.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.7	J	1.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-12	LORNG_MMW0011_05162024	Perfluorobutanoic acid (PFBA)	7.1	J	7.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.7	J	3.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.5	J	1.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15852-18	LORNG_MMW0124_05162024	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.9	J	4.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.4	J	3.4	J	TR	NG/L

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Date: 9/11/2024

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-18	LORNG_MMW0124_05162024	Perfluoroheptanoic acid (PFHpA)	2.7	J	2.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.3	J	1.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	UJ	IVD	NG/L
			FC15852-19	LORNG_OW22001_05162024	Perfluorohexanoic acid (PFHxA)	1.4	J	1.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.81	J	0.81	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.7	J	1.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.62	J	0.62	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15852-13	LORNG_OW22003_05162024	Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.72	J	0.72	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.47	J	0.47	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15852-20	LORNG_RFW-38_05162024	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	17	U	17	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	17	U	17	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15852	E1633DR	T	FC15852-14	LORNG_SB/OW17001_05162024	Perfluorobutanoic acid (PFBA)	10.2	J	10.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	J	2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
FC15912	E1633DR	T	FC15912-1	LORNG_BB_OW001_05212024	Perfluorobutanoic acid (PFBA)	7.4	J	7.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.5	J	2.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2	J	2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.5	J	0.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-45	LORNG_BW03002_05212024	Perfluoropentanoic acid (PFPeA)	1.4	J	1.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.3	J	2.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.83	J	0.83	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.9	J	1.9	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.67	J	0.67	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-22	LORNG_BW06008_05222024	Perfluorobutanoic acid (PFBA)	2.6	J	2.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.4	J	2.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.1	J	2.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2	J	2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.82	J	0.82	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-2	LORNG_BW08003_05212024	Perfluorobutanoic acid (PFBA)	7.7	J	7.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15912-27	LORNG_BW09001_05202024HS	Perfluorobutanoic acid (PFBA)	3.3	J	3.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.6	J	6.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.8	J	1.8	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.5	J	3.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.57	J	0.57	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	CVHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-27	LORNG_BW09001_05202024HS	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-28	LORNG_BW10006_05202024	Perfluorobutanoic acid (PFBA)	4.5	J	4.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.7	J	3.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1	J	1	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-29	LORNG_BW10006_05202024FD	Perfluorobutanoic acid (PFBA)	4.4	J	4.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	7.8	J	7.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.4	J	3.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-46	LORNG_BW10008_05212024	Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.2	J	2.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-46	LORNG_BW10008_05212024	Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	3.3	J	3.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-3	LORNG_BW13002_05212024	Perfluorobutanoic acid (PFBA)	2	J	2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.5	J	2.5	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.71	J	0.71	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.52	J	0.52	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.82	J	0.82	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.8	J	0.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-15	LORNG_BW13003_05222024	Perfluorobutanoic acid (PFBA)	6.1	J	6.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.5	J	2.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3	J	3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.96	J	0.96	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-15	LORNG_BW13003_05222024	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-16	LORNG_BW17006_05222024	Perfluorobutanoic acid (PFBA)	2.7	J	2.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.8	J	5.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.86	J	0.86	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.92	J	0.92	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-4	LORNG_BW18004_05212024	Perfluorohexanoic acid (PFHxA)	1.2	J	1.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-47	LORNG_BW18010_05212024	Perfluoropentanoic acid (PFPeA)	2.8	J	2.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2	J	2	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.94	J	0.94	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L

Prepared by:AKN
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
FC15912	E1633DR	T	FC15912-8	LORNG_BW20001_05212024	Perfluorobutanoic acid (PFBA)	7.8	J	7.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.9	J	2.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.3	J	4.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.94	J	0.94	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15912-9	LORNG_CBW02_05222024	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.1	J	2.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.72	J	0.72	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.3	J	1.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15912-30	LORNG_JBW7305_107_05202024	Perfluorobutanoic acid (PFBA)	9.4	J	9.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1	J	1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	J	2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
FC15912	E1633DR	T	FC15912-39	LORNG_JBW7305_33_05202024	Perfluorobutanoic acid (PFBA)	8.3	J	8.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.86	J	0.86	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.7	J	1.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-17	LORNG_JBW7341B_05222024	Perfluorobutanoic acid (PFBA)	6.4	J	6.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3	J	3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.1	J	4.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	J	2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-33	LORNG_JBW7350_05172024	Perfluorobutanoic acid (PFBA)	2.4	J	2.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.4	J	4.4	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.7	J	3.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.5	J	1.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L

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Checked by: MDS
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
FC15912	E1633DR	T	FC15912-48	LORNG_JBW7403_05212024	N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-31	LORNG_JBW7714_05202024	Perfluorobutanesulfonic acid (PFBS)	0.72	J	0.72	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	14.8	J	14.8	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.8	J	7.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L
			FC15912-5	LORNG_JBW7734_05212024	Perfluorobutanoic acid (PFBA)	3.8	J	3.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.8	J	5.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.71	J	0.71	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-6	LORNG_JBW7734_05212024FD	Perfluorobutanoic acid (PFBA)	3.7	J	3.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.9	J	5.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-18	LORNG_JBW7737A_05222024	Perfluorobutanoic acid (PFBA)	9.5	J	9.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.8	J	4.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-19	LORNG_JBW7737A_05222024FD	Perfluorobutanoic acid (PFBA)	9.4	J	9.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.71	J	0.71	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.6	J	4.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-23	LORNG_JBW7737B_05222024	Perfluorobutanoic acid (PFBA)	11.8	J	11.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.3	J	1.3	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1	J	1	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.72	J	0.72	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-24	LORNG_JBW7737B_05222024FD	Perfluorobutanoic acid (PFBA)	11.7	J	11.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.5	J	1.5	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.73	J	0.73	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.68	J	0.68	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-10	LORNG_JBW7738A_05212024	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3.5	J	3.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-34	LORNG_JMW-0406_05172024	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.3	J	1.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.4	J	2.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.8	J	1.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.74	J	0.74	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1	J	1	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-49	LORNG_JMW0445_05202024	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.7	J	3.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.2	J	2.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.7	J	1.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1	J	1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-25	LORNG_JMW1960_05222024	Perfluorononanoic acid (PFNA)	0.93	J	0.93	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.1	J	3.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.5	J	1.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L
			FC15912-35	LORNG_JMW7322_05172024	Perfluorobutanoic acid (PFBA)	8.7	J	8.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.98	J	0.98	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.3	J	3.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4	J	4	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.7	J	0.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.3	U	4.3	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	22	U	22	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	22	U	22	UJ	IVD	NG/L
			FC15912-36	LORNG_JPZ0606_05172024	Perfluorobutanoic acid (PFBA)	8.5	J	8.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.3	J	3.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	3.3	J	3.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.4	J	1.4	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.2	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-36	LORNG_JPZ0606_05172024	N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-20	LORNG_JPZ7704_05222024	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2	J	2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.67	J	0.67	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.2	U	4.2	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L
			FC15912-32	LORNG_MMW0004_05202024	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.3	J	3.3	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.72	J	0.72	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.3	J	TR	NG/L
			FC15912-37	LORNG_MMW0007B_05172024	Perfluorobutanoic acid (PFBA)	5.5	J	5.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.72	J	0.72	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-37	LORNG_MMW0007B_05172024	N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-50	LORNG_MMW0017_05202024	Perfluorobutanoic acid (PFBA)	5.6	J	5.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.95	J	0.95	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.9	J	2.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.77	J	0.77	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-51	LORNG_MMW0330_05212024	Perfluorobutanoic acid (PFBA)	5.3	J	5.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.75	J	0.75	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2	J	3.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.2	J	2.2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15912-40	LORNG_MMW0423_05172024	Perfluorobutanoic acid (PFBA)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.6	J	1.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.1	J	1.1	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-40	LORNG_MMW0423_05172024	Perfluorooctanoic acid (PFOA)	2.2	J	2.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15912-26	LORNG_OW05004_05222024	Perfluorobutanoic acid (PFBA)	10.3	J	10.3	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.4	J	2.4	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.4	J	1.4	J	IAG, TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	4.9	J	4.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-41	LORNG_OW10005_05202024	Perfluorobutanoic acid (PFBA)	8.6	J	8.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.76	J	0.76	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.58	J	0.58	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-38	LORNG_OW14004_05172024	Perfluorobutanoic acid (PFBA)	13.4	J	13.4	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.6	J	2.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15912-11	LORNG_OW17002_05222024	Perfluorooctanoic acid (PFOA)	1.7	J	1.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.76	J	0.76	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.79	J	0.79	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-21	LORNG_OW17003_05222024	Perfluorobutanoic acid (PFBA)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.7	J	1.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	IAG, TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.82	J	0.82	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.5	J	2.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4.1	U	4.1	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	21	U	21	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	21	U	21	UJ	IVD	NG/L

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Checked by: MDS
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-42	LORNG_OW20006_05202024	Perfluorobutanoic acid (PFBA)	7.6	J	7.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.9	J	1.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3	J	3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.3	J	4.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.2	J	2.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.8	J	0.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-43	LORNG_OW20007_05202024	Perfluorobutanoic acid (PFBA)	6	J	6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.88	J	0.88	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.4	J	1.4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-12	LORNG_OW21005_05212024	Perfluorobutanoic acid (PFBA)	2.2	J	2.2	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.5	J	1.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.87	J	0.87	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-12	LORNG_OW21005_05212024	Perfluorooctanesulfonic acid (PFOS)	3.6	J	3.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-13	LORNG_OW21005_05212024FD	Perfluorobutanoic acid (PFBA)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.8	J	2.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3.2	J	3.2	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.96	J	0.96	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-14	LORNG_RFW1144_05212024	Perfluorobutanoic acid (PFBA)	8.8	J	8.8	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.81	J	0.81	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3	J	2.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.69	J	0.69	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.94	J	0.94	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15912	E1633DR	T	FC15912-44	LORNG_UNK-042_05202024	Perfluorobutanoic acid (PFBA)	6.5	J	6.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.94	J	0.94	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.4	J	3.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.6	J	4.6	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.8	J	1.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15912-7	LORNG_UNK-044_05212024	Perfluorobutanoic acid (PFBA)	2.7	J	2.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	2.6	J	2.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.9	J	0.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2	J	2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
FC15948A	E1633DR	T	FC15948-28	LORNG_BW07001_05232024	Perfluoroheptanesulfonic acid (PFHpS)	3.5	J	3.5	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.2	J	1.2	J	TR. IAG	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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Checked by: MDS
Date: 9/11/2024

Table 3 - Data Qualification Summary
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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948A	E1633DR	T	FC15948-29	LORNG_BW07002_05232024	Perfluorononanoic acid (PFNA)	2.3	J	2.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.8	J	2.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15948-30	LORNG_BW09001_05232024	Perfluorobutanoic acid (PFBA)	8.5	J	8.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.99	J	0.99	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	3.1	J	3.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15948-23	LORNG_JMW0683_05232024	Perfluorobutanoic acid (PFBA)	7.5	J	7.5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.1	J	3.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2	J	2	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L

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Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
FC15948A	E1633DR	T	FC15948-24	LORNG_MMW3402R_05232024	Perfluorononanoic acid (PFNA)	1.9	J	1.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.3	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.87	J	0.87	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.9	U	3.9	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC15948-31	LORNG_OW09001_05232024	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.8	J	0.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	4.1	J	4.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC15948-32	LORNG_OW09001_05232024FD	Perfluorobutanoic acid (PFBA)	7.1	J	7.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.7	J	0.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.5	J	3.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.3	J	2.3	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948A	E1633DR	T	FC15948-25	LORNG_RFW1147_05232024	Perfluorobutanoic acid (PFBA)	13.6	J	13.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	3.4	J	3.4	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1	J	1	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	0.62	J	0.62	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	U	3.6	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC15948-26	LORNG_USGS2_125_05232024	Perfluorobutanoic acid (PFBA)	11.1	J	11.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	3.2	J	3.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.9	J	3.9	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.3	J	2.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6.1	J	6.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	U	3.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15948A	E1633DR	T	FC15948-27	LORNG_USGS2_40_05232024	Perfluorobutanoic acid (PFBA)	10.2	J	10.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.89	J	0.89	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.6	J	2.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	3.1	J	3.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.9	J	1.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	CVHL	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.7	U	3.7	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
FC16137	E1633DR	T	FC16137-1	LORNG_BW01009_05242024	Perfluorononanoic acid (PFNA)	2.2	J	2.2	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	11.1	J	11.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.9	J	2.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-13	LORNG_BW06007_06032024	Perfluorodecanoic acid (PFDA)	1.1	J	1.1	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.62	J	0.62	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.9	J	2.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
FC16137	E1633DR	T	FC16137-14	LORNG_BW06007_06032024FD	Perfluorodecanoic acid (PFDA)	1.1	J	1.1	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.66	J	0.66	J	IAG, TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.7	J	2.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-15	LORNG_BW13001_06032024	Perfluorohexanoic acid (PFHxA)	0.84	J	0.84	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.56	J	0.56	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.63	J	0.63	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16137-16	LORNG_JBW7215B_06032024	Perfluorobutanoic acid (PFBA)	5	J	5	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.93	J	0.93	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.6	J	1.6	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	4	U	4	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
					Perfluorobutanoic acid (PFBA)	6	J	6	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			FC16137-17	LORNG_JBW7336A_06032024	Perfluoropentanoic acid (PFPeA)	5.7	J	5.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.2	J	3.2	J	TR	NG/L
FC16137	E1633DR	T	FC16137-17	LORNG_JBW7336A_06032024	Perfluorononanoic acid (PFNA)	0.58	J	0.58	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.2	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16137-8	LORNG_JBW7348_06032024	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.61	J	0.61	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5.2	J	5.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.9	J	1.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-9	LORNG_JBW7348_06032024FD	Perfluorobutanoic acid (PFBA)	3.5	J	3.5	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5	J	5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.7	J	1.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L

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Checked by: MDS
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16137	E1633DR	T	FC16137-2	LORNG_JBW7738B_05242024	Perfluorobutanoic acid (PFBA)	7.9	J	7.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16137-10	LORNG_JMW0880_06032024	Perfluorobutanoic acid (PFBA)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	3	J	3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.98	J	0.98	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.9	J	2.9	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.8	U	3.8	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-3	LORNG_JPZ0348_05242024	Perfluorobutanoic acid (PFBA)	6.9	J	6.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2	J	2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.7	J	2.7	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16137	E1633DR	T	FC16137-11	LORNG_MMW0020_150_06032024	Perfluorooctanoic acid (PFOA)	0.48	J	0.48	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.94	J	0.94	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-12	LORNG_MMW0020_60_06032024	Perfluorooctanoic acid (PFOA)	0.53	J	0.53	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-4	LORNG_OW08002_05242024	Perfluorobutanoic acid (PFBA)	14.2	J	14.2	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.6	J	2.6	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.65	J	0.65	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6.2	J	6.2	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	8.4	=	8.4	J	IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-5	LORNG_OW08002_05242024FD	Perfluorobutanoic acid (PFBA)	14	J	14	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.64	J	0.64	J	IAG, TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6.5	J	6.5	J	TR	NG/L

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Checked by: MDS
Date: 9/11/2024

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Former Loring Air Force Base, Maine
Spring 2024 - SDGs FC15432, FC15647, FC15852, FC15912, FC15948A, FC16137, FC16207, FC16236, FC16337

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16137	E1633DR	T	FC16137-5	LORNG_OW08002_05242024FD	N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16137-6	LORNG_OW12002_05242024	Perfluorobutanoic acid (PFBA)	9.9	J	9.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.1	J	2.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
			FC16137-7	LORNG_UNK-TC01_06032024	Perfluorobutanoic acid (PFBA)	6.7	J	6.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	6.1	J	6.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.5	J	2.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.72	J	0.72	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1	J	1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
FC16207	E1633DR	T	FC16207-1	LORNG_AA18MW-01_06042024	Perfluorobutanoic acid (PFBA)	6	J	6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.82	J	0.82	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	3	J	3	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L

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Former Loring Air Force Base, Maine
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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
FC16207	E1633DR	T	FC16207-4	LORNG_JMW1565_06042024	Perfluorodecanesulfonic acid (PFDS)	2	U	2	UJ	CVHL	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	16.9	J	16.9	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.5	J	1.5	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	20	U	20	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	20	U	20	UJ	IVD	NG/L
			FC16207-5	LORNG_JPZ0342_06042024	Perfluorononanoic acid (PFNA)	3.2	J	3.2	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16207-6	LORNG_OW07002_06042024	Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
			FC16207-7	LORNG_USMW003_06042024	Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.2	J	TR	NG/L
					Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	UJ	CVHL	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16236	E1633DR	T	FC16236-1	LORNG_AA11MW-01_06042024	Perfluorobutanoic acid (PFBA)	6.6	J	6.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.57	J	0.57	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	18	U	18	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	18	U	18	UJ	CVHL	NG/L
			FC16236-2	LORNG_AA11MW-02_06042024	Perfluorobutanoic acid (PFBA)	9.4	J	9.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	0.71	J	0.71	J	IAG, TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	190	U	190	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	190	U	190	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	U	19	UJ	CVHL	NG/L
			FC16236-3	LORNG_BW12006_06042024	Perfluorobutanoic acid (PFBA)	11.7	J	11.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.1	J	2.1	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	19	U	19	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	19	U	19	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	19	U	19	UJ	CVHL	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16236	E1633DR	T	FC16236-4	LORNG_JBW7753A_06052024	Perfluorobutanoic acid (PFBA)	7.4	J	7.4	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	2.2	J	2.2	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.3	J	1.3	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	5.1	J	5.1	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.6	U	3.6	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	180	U	180	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	180	U	180	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	18	U	18	UJ	CVHL	NG/L
			FC16236-5	LORNG_OW08001_06052024	Perfluorononanoic acid (PFNA)	3.6	J	3.6	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	12.3	J	12.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	4.4	=	4.4	J	IAG	NG/L
					N-methyl perfluorooctanesulfonamide (NMeFOSA)	3.7	U	3.7	UJ	IVD	NG/L
					N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	18	U	18	UJ	IVD	NG/L
					N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	180	U	180	UJ	IVD	NG/L
					3-Perfluoroheptyl propanoic acid (7:3FTCA)	18	U	18	UJ	CVHL	NG/L
FC16337	E1633DR	T	FC16337-22	LORNG_AA20MW-01_06072024	Perfluorobutanoic acid (PFBA)	4.4	J	4.4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.6	J	4.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.2	J	1.2	J	TR	NG/L
			FC16337-23	LORNG_ASMW101_06072024	Perfluorobutanoic acid (PFBA)	5.9	J	5.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.2	J	2.2	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC16337	E1633DR	T	FC16337-15	LORNG_BW05009_06062024	Perfluorononanesulfonic acid (PFNS)	3.7	J	3.7	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	1.3	J	1.3	J	TR	NG/L
			FC16337-16	LORNG_BW06005_06062024	Perfluorononanoic acid (PFNA)	3.2	J	3.2	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	2.4	J	2.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	12.8	J	12.8	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
			FC16337-1	LORNG_BW18008_06062024	Perfluorohexanoic acid (PFHxA)	1.5	J	1.5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.97	J	0.97	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.3	J	2.3	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.52	J	0.52	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.76	J	0.76	J	TR	NG/L
			FC16337-8	LORNG_BW20002_06062024	Perfluorobutanoic acid (PFBA)	5.1	J	5.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.65	J	0.65	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3	J	2.3	J	TR	NG/L
			FC16337-2	LORNG_FMW3413_06062024	Perfluorobutanoic acid (PFBA)	5.1	J	5.1	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.86	J	0.86	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.97	J	0.97	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.2	J	1.2	J	TR	NG/L
			FC16337-19	LORNG_JBW7304_06072024	Perfluorobutanoic acid (PFBA)	6.2	J	6.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.1	J	2.1	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.79	J	0.79	J	TR	NG/L
			FC16337-11	LORNG_JBW7335A_06062024	Perfluorobutanoic acid (PFBA)	5.6	J	5.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.61	J	0.61	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.1	J	2.1	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluoroheptanesulfonic acid (PFHpS)	0.67	J	0.67	J	TR	NG/L
FC16337	E1633DR	T	FC16337-12	LORNG_JBW7335B_06062024	Perfluorobutanoic acid (PFBA)	4.9	J	4.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.6	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.2	J	2.2	J	TR	NG/L
			FC16337-25	LORNG_JBW7912_150_06072024	Perfluorobutanoic acid (PFBA)	8.9	J	8.9	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.74	J	0.74	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.5	J	2.5	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.79	J	0.79	J	TR	NG/L
			FC16337-26	LORNG_JBW7912_46_06072024	Perfluorobutanoic acid (PFBA)	9.7	J	9.7	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	1.1	J	1.1	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	2.1	J	2.1	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.83	J	0.83	J	TR	NG/L
			FC16337-3	LORNG_JMW0882_06062024	Perfluoropentanoic acid (PFPeA)	2.2	J	2.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.8	J	2.8	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.6	J	1.6	J	TR	NG/L
					Perfluorononanoic acid (PFNA)	0.62	J	0.62	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.81	J	0.81	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	J	4.3	J	TR	NG/L
			FC16337-4	LORNG_JMW0882_06062024FD	Perfluorobutanoic acid (PFBA)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.8	J	1.8	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.9	J	2.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.5	J	1.5	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.7	J	0.7	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					Perfluoroheptanesulfonic acid (PFHpS)	0.8	J	0.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.5	J	3.5	J	TR	NG/L
FC16337	E1633DR	T	FC16337-27	LORNG_JMW0980_06072024	Perfluoropentanoic acid (PFPeA)	1.9	J	1.9	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.7	J	2.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	2.4	J	2.4	J	TR	NG/L
					N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.98	J	0.98	J	TR	NG/L
			FC16337-28	LORNG_JMW1665_06072024	Perfluorobutanoic acid (PFBA)	4	J	4	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	5	J	5	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	3.6	J	3.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	0.63	J	0.63	J	IAG, TR	NG/L
			FC16337-13	LORNG_JMW1684_06062024	Perfluorobutanoic acid (PFBA)	3.8	J	3.8	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.7	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	J	TR	NG/L
			FC16337-14	LORNG_JMW1684_06062024FD	Perfluorobutanoic acid (PFBA)	3.9	J	3.9	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.9	J	1.9	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.7	J	2.7	J	TR	NG/L
					Perfluoroheptanesulfonic acid (PFHpS)	0.68	J	0.68	J	TR	NG/L
			FC16337-5	LORNG_JMW1982_06062024	Perfluorobutanoic acid (PFBA)	11.8	J	11.8	J	TR	NG/L
					Perfluorodecanoic acid (PFDA)	0.64	J	0.64	J	TR	NG/L
					Perfluorononanesulfonic acid (PFNS)	1.1	J	1.1	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	11	J	11	J	TR	NG/L

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SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			FC16337-6	LORNG_OW05002_06062024	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	7.3	J	7.3	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
FC16337	E1633DR	T	FC16337-7	LORNG_OW05002_06062024FD	1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	6.4	J	6.4	J	TR	NG/L
					Perfluorooctane sulfonamide (PFOSA)	1.8	J	1.8	J	TR	NG/L
			FC16337-20	LORNG_OW05003_06062024	Perfluorobutanoic acid (PFBA)	12.4	J	12.4	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.6	J	7.6	J	TR	NG/L
			FC16337-21	LORNG_OW05003_06062024FD	Perfluorobutanoic acid (PFBA)	11.9	J	11.9	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	6.9	J	6.9	J	TR	NG/L

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

CVHL = High ISC or CCV recovery.

IAG = Transition ion ratio outside limits

IVD = ICV recovery is outside of limits.

TR = Analyte concentration is less than LOQ

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15432	LORNG_JBW7327_45_05022024	LORNG_JBW7327_45_05022024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	5.5	J	5.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	12.1		11.6		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	16		16.2		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4		3.8		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	6.2		6.2		0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	1.2	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.4	J	1.2	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	13.9		14.6		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3.4	J	3.5	J	NC	TR
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	396		453		13	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	UJ	3.6	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	

Prepared by: AKN 9/11/24
Checked by: MDS 9/11/2024

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	5.3	J	5.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.1	J	5	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	14.5		13.5		7	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.4		4.5		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	8.9		9		1	
				Perfluorononanoic acid (PFNA) (NG/L)	1.2	J	1.1	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.82	J	0.73	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	14.6		13.5		8	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	14.5		14.7		1	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	4	U	NC	
FC15647	LORNG_SB/OW16001_05092024	LORNG_SB/OW16001_05092024FD	PFAS	1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	4	U	NC	

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	UJ	4	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	20	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.5	J	3.6	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.9	J	2.9	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.9	J	3	J	NC	TR
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.1	J	2	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	3.7		3.7	J	0	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	0.51	J	0.54	J	NC	TR
				Perfluoroundecanoic acid (PFUnA) (NG/L)	0.73	J	0.7	J	NC	TR
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1	J	0.78	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	3.8	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	20.5		20.8		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	13.3		13.4		1	

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15647	LORNG_USMW025_05092024	LORNG_USMW025_05092024FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	UJ	3.8	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.8	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	19	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	4.1	U	3.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.1	U	0.74	J	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	1	U	1.2	J	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	2.1	U	0.66	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2.1	U	0.64	J	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2.1	U	1.9	U	NC	

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May and June 2024 Groundwater
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Former Loring Air Force Base, Maine
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15852	LORNG_LF3MW3_05162024	LORNG_LF3MW3_05162024FD	PFAS	Perfluorododecanoic acid (PFDoA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.1	U	3.8	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	2.1	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	16.4		17.8		8	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2.1	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4.1	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	8.2	U	7.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	8.2	U	7.7	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	8.2	U	7.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.1	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4.1	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4.1	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4.1	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.1	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	21	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	21	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2.1	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4.1	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2.1	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4.1	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4.1	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4.1	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4.1	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2.1	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	10	U	9.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	21	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	21	U	19	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15852	LORNG_MMW0010_05162024	LORNG_MMW0010_05162024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	7.3	J	7.1	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	16		16.7		4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	16.2		16.8		4	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	10.5		10.8		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	12.5		12.6		1	
				Perfluorononanoic acid (PFNA) (NG/L)	1.1	J	1.3	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.6	J	4		11	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	J	4.2	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	54.1		57.9		7	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	J	1.7	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	66		72		9	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.6	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
FC15912	LORNG_BW10006_05202024	LORNG_BW10006_05202024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4.5	J	4.4	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	8.1		7.8	J	4	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8.6		9.7		12	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	3.7	J	3.4	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	9.4		8.7		8	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2.1	J	2.1	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.8	J	2.8	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	37.3		36.5		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1	J	1.1	J	NC	IAG, TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	33.1		31.4		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.7	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.7	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.7	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	UJ	4	UJ	NC	IVD

Table 4 - Field Duplicate Summary
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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	20	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	20	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.8	J	3.7	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.8	J	5.9	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	6.6		6.3		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.7		4.8		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.6		5.4		4	
				Perfluorononanoic acid (PFNA) (NG/L)	0.71	J	0.7	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	1.8	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.5	J	2.6	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	36.6		36.2		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.2	J	1.1	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	43.2		44		2	

Table 4 - Field Duplicate Summary
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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15912	LORNG_JBW7734_05212024	LORNG_JBW7734_05212024FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.6	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.6	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.6	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	UJ	3.8	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.5	U	9.4	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	9.5	J	9.4	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	23		23.3		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	37.6		35.8		5	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	9.5		9.3		2	
				Perfluorooctanoic acid (PFOA) (NG/L)	12.6		11.2		12	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	0.71	J	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	

Table 4 - Field Duplicate Summary
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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15912	LORNG_JBW7737A_05222024	LORNG_JBW7737A_05222024FD	PFAS	Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	16.7		16.4		2	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	17.4		18		3	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	90		91.5		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	7.8		7.6		3	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	239		232		3	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	4.8	J	4.6	J	NC	TR
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	UJ	3.8	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.8	U	NC	
				11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

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Loring PFAS RI
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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15912	LORNG_JBW7737B_05222024	LORNG_JBW7737B_05222024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	11.8	J	11.7	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	27.7		27.4		1	
				Perfluorohexanoic acid (PFHxA) (NG/L)	38		38.3		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	15.3		15.3		0	
				Perfluorooctanoic acid (PFOA) (NG/L)	17.9		18		1	
				Perfluorononanoic acid (PFNA) (NG/L)	1.3	J	1.5	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	16.6		16.5		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	21.1		22.2		5	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	151		155		3	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	11.2		10		11	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	381		288		28	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1	J	0.73	J	NC	IAG, TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.9	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.8	U	8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.8	U	8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	0.72	J	0.68	J	NC	IAG, TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.9	UJ	4	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.9	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	UJ	20	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	UJ	20	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.9	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	

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SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.9	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.9	U	4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.9	U	4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.9	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.8	U	10	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	
FC15912	LORNG_OW21005_05212024	LORNG_OW21005_05212024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	2.2	J	2.1	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.6	J	2.8	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.8	J	3.2	J	NC	TR
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.4	J	1.6	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	1.5	J	1.6	J	NC	TR
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.87	J	0.96	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	10.8		10.9		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	3.6	J	3.9		8	TR
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	UJ	3.7	UJ	NC	IVD

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	6.6	J	7.1	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	12.5		13.3		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	18.6		21		12	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	7.3		8.1		10	
				Perfluorooctanoic acid (PFOA) (NG/L)	16.9		18.4		8	
				Perfluorononanoic acid (PFNA) (NG/L)	0.8	J	0.7	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	3.2	J	3.5	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4.1	J	4.5		9	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	126		140		11	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.6	J	2.1	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	48.3		55.4		14	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC15948A	LORNG_OW09001_05232024	LORNG_OW09001_05232024FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	J	2.3	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.6	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	72.1		72.8		1	
				Perfluoropentanoic acid (PFPeA) (NG/L)	244		245		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	133		134		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	147		145		1	
				Perfluorooctanoic acid (PFOA) (NG/L)	73.2		71.9		2	
				Perfluorononanoic acid (PFNA) (NG/L)	14.7		16.3		10	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.1	J	1.1	J	NC	TR
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	

Prepared by: AKN 9/11/24
Checked by: MDS 9/11/2024

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16137	LORNG_BW06007_06032024	LORNG_BW06007_06032024FD	PFAS	Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	7.8		7.9		1	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	10.4		11.2		7	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	82.5		86.8		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	3.7		3.7		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	135		142		5	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.62	J	0.66	J	NC	IAG, TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	198		201		2	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	55.2		57.1		3	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2.9	J	2.7	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	UJ	3.7	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16137	LORNG_JBW7348_06032024	LORNG_JBW7348_06032024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.6	J	3.5	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.2	J	5	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	6		5.5		9	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.2		4		5	
				Perfluorooctanoic acid (PFOA) (NG/L)	5.5		4.9		12	
				Perfluorononanoic acid (PFNA) (NG/L)	0.61	J	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.5	J	1.4	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1.9	J	1.7	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	20.6		18.6		10	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	20		18.2		9	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.7	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.7	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.7	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	UJ	3.8	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	19	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	

Table 4 - Field Duplicate Summary
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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.6	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC16137	LORNG_OW08002_05242024	LORNG_OW08002_05242024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	14.2	J	14	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	43.8		42.8		2	
				Perfluorohexanoic acid (PFHxA) (NG/L)	52.7		52.9		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	19.5		18.3		6	
				Perfluorooctanoic acid (PFOA) (NG/L)	56.7		55.8		2	
				Perfluorononanoic acid (PFNA) (NG/L)	2.6	J	2.2	J	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	7.9		7.6		4	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	10.9		11		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	211		203		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	5.6		4.6		20	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	211		193		9	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	0.65	J	0.64	J	NC	TR
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.4	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	6.2	J	6.5	J	NC	TR
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.4	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	8.4	J	8		5	IAG
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	UJ	3.6	UJ	NC	IVD

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	UJ	18	UJ	NC	IVD
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.6	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.1	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	1.9	J	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2.2	J	1.8	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	2.8	J	2.9	J	NC	TR
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.6	J	1.5	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	9.8		9.6		2	
				Perfluorononanoic acid (PFNA) (NG/L)	0.62	J	1.8	U	NC	TR
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.81	J	0.7	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	10.3		10.4		1	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.1	J	0.8	J	NC	TR
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	31.1		31.4		1	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16337	LORNG_JMW0882_06062024	LORNG_JMW0882_06062024FD	PFAS	Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.3	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4.3	J	3.5	J	NC	TR
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.3	U	9.2	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	18	U	NC	
				Perfluorobutanoic acid (PFBA) (NG/L)	3.8	J	3.9	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	7.7		7.7		0	
				Perfluorohexanoic acid (PFHxA) (NG/L)	8		8		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	4.6		4.4		4	
				Perfluorooctanoic acid (PFOA) (NG/L)	4.8		4.6		4	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.8	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16337	LORNG_JMW1684_06062024	LORNG_JMW1684_06062024FD	PFAS	Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.7	J	1.9	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	2.7	J	2.7	J	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	24.4		24.8		2	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	0.68	J	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	30.1		29.5		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.8	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.6	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.2	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.2	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.2	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.8	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.6	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	18	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	18	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.8	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.8	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.6	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.6	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.6	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.6	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.8	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	18	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	18	U	NC	

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Data Validation Report
May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC16337	LORNG_OW05002_06062024	LORNG_OW05002_06062024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	30.7		29.9		3	
				Perfluoropentanoic acid (PFPeA) (NG/L)	120		116		3	
				Perfluorohexanoic acid (PFHxA) (NG/L)	124		123		1	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	68.2		66.5		3	
				Perfluorooctanoic acid (PFOA) (NG/L)	134		133		1	
				Perfluorononanoic acid (PFNA) (NG/L)	24		23.8		1	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	83.4		81.1		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	130		128		2	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1100		919		18	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	25.3		25.2		0	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	885		998		12	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.6	U	7.6	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	108		115		6	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	J	6.4	J	NC	TR
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	J	1.8	J	NC	TR
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	

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May and June 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.5	U	9.5	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC16337	LORNG_OW05003_06062024	LORNG_OW05003_06062024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	12.4	J	11.9	J	NC	TR
				Perfluoropentanoic acid (PFPeA) (NG/L)	36.6		34.3		6	
				Perfluorohexanoic acid (PFHxA) (NG/L)	22.1		19.9		10	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	20.8		19.3		7	
				Perfluorooctanoic acid (PFOA) (NG/L)	20.1		18.7		7	
				Perfluorononanoic acid (PFNA) (NG/L)	6.3		6		5	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	7.3		7.5		3	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	13.5		13.4		1	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	152		146		4	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	8.4		7.8		7	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	521		529		2	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.7	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.6	J	6.9	J	NC	TR
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.7	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.7	U	NC	

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Loring PFAS RI
Former Loring Air Force Base, Maine
Spring 2024 Groundwater Program - SDGs FC15432, FC15647, FC15852, FC15912

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.6	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	

Notes:

U = Analyte not detected at the associated detection limits

J = Analyte is estimated

UJ = Analyte not detected; reporting limits estimated

NG/L = nanograms per liter

IAG = Transition ion ratio outside limits

IVD = ICV recovery is outside of limits.

RPD = relative percent difference between parent sample and field duplicate.

TR = Analyte concentration is less than LOQ

DATA VALIDATION REPORT

MAY 2024 GROUNDWATER
LORING PFAS RI
FORMER LORING AIR FORCE BASE
LIMESTONE, MAINE
WSP PROJECT # US-EI-775361701

Prepared for:

UNITED STATES AIR FORCE,
CIVIL ENGINEERING CENTER

485 Quentin Roosevelt Rd, San Antonio, Texas 78226

NOVEMBER 3, 2024

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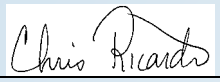
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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
µg/L	micrograms per liter
%	percent
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
EtFOSA	ethyl perfluorooctanesulfonamide
EtFOSAA	ethyl perfluorooctanesulfonamidoacetic acid
EtFOSE	ethyl perfluorooctanesulfonamidoethanol
FTS	fluorotelomer sulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LLCS	low-level laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MeFOSE	methyl perfluorooctanesulfonamidoethanol
MS	matrix spike
MSD	matrix spike duplicate
ng/L	nanograms per liter
NIS	non-extracted internal standard
PFAS	per- and polyfluoroalkyl substances
PFBA	perfluorobutanoic acid
PFNS	perfluorononanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual
RPD	relative percent difference
SGS	SGS North America, Inc.
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION

WSP USA Environment & Infrastructure Inc. (WSP) collected 46 aqueous samples, including 6 equipment blanks, one field blank, and 3 field duplicates, between 3 and 9 May 2024 from the former Loring Air Force Base, located in Limestone, Maine. WSP submitted the samples to SGS North America, Inc. (SGS), located in Orlando, Florida, where they were received between 9 and 10 May 2024 and assigned to job numbers FC15544 and FC15576. SGS analyzed the samples for per- and polyfluoroalkyl substances (PFAS) using United States Environmental Protection Agency (EPA) Draft Method 1633.

A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample IDs is presented in Table 1.

2 DATA VALIDATION METHODOLOGY

WSP performed Department of Defense (DoD) State 4 validation on a minimum of 10 percent (%) of primary field samples analyzed by SGS and Stage 2B validation on the remaining samples. The Stage 4 validation includes review of the quality control (QC) results in the laboratory's analytical report and reported in QC summary forms as well as recalculated checks and review of the instruments raw data outputs. The Stage 2B validation includes review of quality control (QC) results in the laboratory's analytical report and reported on QC summary forms but does not include review or validation of the raw analytical data. Data from equipment and field blanks did not undergo validation because results from these samples are only used to assess data usability for field samples. This data validation has been performed in general accordance with:

- WSP, 2024. Draft Quality Program Plan Addendum, Revision 1, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.
- DoD, 2019. DoD General Data Validation Guidelines, September.
- DoD, 2021. DoD Department of Energy Consolidated Quality Systems Manual (QSM) for Environmental Laboratories Version 5.4, October.
- DoD, 2022. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.
- EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), July.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Sample receipt condition;
- Mass Calibration;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Bile salt standard;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;

- Extracted Internal Standard (EIS) and non-extracted internal standard (NIS) recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, or MSs/MS duplicates (MSDs);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanation of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analyses verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J	The reported result was an estimated value.
J+	The reported result was an estimated value with a positive bias.
J-	The reported result was an estimated value with a negative bias.
NJ	The analyte has been tentatively identified as present and the concentration is estimated.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

5 QUALIFICATION REASON CODES

The following reason codes were applied to the data during data validation:

EBL	The analyte was detected in the associated equipment blank and the concentration detected in the sample was less than the limit of quantitation (LOQ).
EISH	High EIS recovery.
IVD	ICV recovery outside limits.
TR	The detected analyte concentration is less than the LOQ.

6 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at average temperatures less than the method-specified maximum of 6 degrees Celsius (°C).

7 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 9.0.

7.1 PFAS BY EPA DRAFT METHOD 1633

PFAS results generated by SGS may be considered usable with the limitations described in Sections 7.1.1 through 7.1.15.

7.1.1 HOLDING TIMES

The samples were extracted for PFAS within the method-specified maximum holding time of 28 days from sample collection when stored at temperatures between 0 and 6 °C. Extracts were analyzed within the method-specified maximum hold time of 90 days from extraction.

7.1.2 MASS CALIBRATION FREQUENCY

According to the laboratory's notes, the analytical instrument underwent mass calibration to the instrument's manufacturer's specifications and using the manufacturer's recommended standard less than a year before the samples reviewed in this report were analyzed. The laboratory report included an instrument tuning and mass calibration check that indicated instrument masses were within specification.

7.1.3 INITIAL CALIBRATION COMPLIANCE

Relative standard deviations between response factors for each target analyte were less than or equal to the method-specified maximum of 20% and/or relative standard errors were less than the method-specified maximum of 20% for all target analytes and EISs.

7.1.4 INITIAL CALIBRATION VERIFICATION ACCURACY

ICVs were analyzed after each initial calibration. Recoveries were between 70 and 130%, with the following exceptions:

- Ethyl perfluorooctanesulfonamide (EtFOSA) recovery was low at 69% in the ICV associated with the analysis of samples LORNG_BW16002_05032024, LORNG_GC_BW001_05062024, LORNG_JBW7327_158_05032024, LORNG_JBW7327_265_05062024, LORNG_JMW-0241A_05062024, LORNG_MMW0006_05062024,

LORNG_UNK-23001_05072024, LORNG_USMW024_05032024, equipment blank LORNG_EB001_05062024, and field blank LORNG_FB02_05032024. Data limitations are summarized below.

- WSP UJ qualified the non-detect EtFOSA results from the associated field samples due to the low ICV recovery. (UJ, IVD)
- WSP does not qualify data from equipment or field blanks and data usability is not adversely affected by low ICV recovery.

– EtFOSA recovery was low at 61% in the ICV associated with the standard analysis of samples LORNG_BB_BW002_05072024, LORNG_MMW0018B_05072024, LORNG_MMW0018B_05072024FD, LORNG_NP_BW001D_05072024, LORNG_NP_BW001S_05072024, LORNG_BW02002_05082024, LORNG_BW03001_05072024, LORNG_BW05010_05072024, LORNG_BW22001_05072024, LORNG_JBW7314_05072024, LORNG_OW16003_05072024, LORNG_JMW0941_05082024, LORNG_MMW0002_05082024, and LORNG_BW02001_05082024, and equipment blanks LORNG_EB005_05092024 and LORNG_EB006_05092024. Data limitations are summarized below.

- WSP UJ qualified the non-detect EtFOSA results from the associated field samples due to the low ICV recovery. (UJ, IVD)
- WSP does not qualify data from equipment blanks and data usability is not adversely affected by low ICV recovery.

– Ethyl perfluorooctanesulfonamidoethanol (EtFOSE) and methyl perfluorooctanesulfonamidoethanol (MeFOSE) recoveries were high at 144% and 139%, respectively, in the ICV associated with the confirmation analysis of sample LORNG_BW16002_05032024 and equipment blanks LORNG_EB003_05072024 and LORNG_EB004_05092024. EtFOSE and MeFOSE were not reported from the associated analysis of sample LORNG_BW16002_05032024 and WSP does not qualify data from equipment blanks. Data usability is not adversely affected by high ICV recoveries.

7.1.5 INSTRUMENT SENSITIVITY CHECK COMPLIANCE

Instrument sensitivity checks (ISCs) were analyzed at the beginning of each analytical run, concentrations were equivalent to the LOQ, signal to noise ratios were greater than or equal to 3:1, and recoveries were within the method-specified 70 to 130% limits.

7.1.6 CONTINUING CALIBRATION VERIFICATION COMPLIANCE

CCVs were analyzed at the beginning of the analytical sequence after the ISC, after every ten or fewer samples, and at the end of the analytical sequence. Recoveries were within the method-specified 70 to 130% limits.

7.1.7 BILE SALT INTERFERENCE CHECKS

Bile salt interference checks were analyzed daily and retention times for the bile salts were at least one minute outside the retention times for linear or branched perfluorooctanesulfonic acid (PFOS).

7.1.8 LABORATORY, EQUIPMENT, AND FIELD BLANK DETECTIONS

Target analytes were not detected in the laboratory, equipment, and field blanks associated with the samples reviewed in this report, with the following exceptions:

– Perfluorooctanoic acid (PFOA) and PFOS were detected at concentrations of 0.77 nanograms per liter (ng/L) and 0.56 ng/L, respectively, in equipment blank LORNG_EB003_05072024, associated with samples LORNG_JMW0992_05072024, LORNG_BW03001_05072024, LORNG_MMW0018B_05072024, and LORNG_MMW0018B_05072024FD. Data limitations are summarized below.

- WSP U qualified the PFOA results from the associated samples at their respective LODs because the detected concentrations were less than the LOD. (U, EBL)
- WSP U qualified the PFOS result from sample LORNG_JMW0992_05072024 at the LOD of 2.0 ng/L because the detected concentration was less than the LOD. (U, EBL)
- PFOS either was not detected in the remaining associated samples or the detected concentrations were greater than five times the concentration detected in the blank and data usability is not adversely affected by the blank detection.

– Perfluorooctanesulfonamide (PFOSA) was detected at a concentration of 1.3 ng/L in equipment blank LORNG_EB004_05092024, associated with samples LORNG_LF2MW3_05082024, LORNG_BW02001_05082024, and LORNG_BW02002_05082024. PFOSA was not detected in the associated samples and data usability is not adversely affected by the blank detection.

– EtFOSA was detected at a concentration of 0.0011 micrograms per liter (ug/L) in the instrument blank associated with the analysis of samples LORNG_BB_BW002_05072024, LORNG_JMW0992_05072024, LORNG_MMW0018B_05072024, LORNG_MMW0018B_05072024FD, LORNG_NP_BW001D_05072024, LORNG_NP_BW001S_05072024, LORNG_BW02002_05082024, LORNG_BW03001_05072024, LORNG_BW05010_05072024, LORNG_BW22001_05072024, LORNG_JBW7314_05072024, LORNG_OW16003_05072024, LORNG_JMW0941_05082024, LORNG_MMW0002_05082024, LORNG_BW02001_05082024, and LORNG_GC_BW002S_05082024; and equipment blanks LORNG_EB003_05072024, LORNG_EB005_05092024, and LORNG_EB006_05092024. EtFOSA was not detected in the associated samples, WSP does not qualify data form equipment blanks, and data usability is not adversely affected by the blank detection.

– EtFOSA was detected at a concentration of 0.0011 ug/L in the instrument blank associated with the analysis of sample LORNG_JMW0992_05072024 and equipment blank LORNG_EB003_05072024. EtFOSA was not detected in the associated sample, WSP does not qualify data from equipment blanks, and data usability is not adversely affected by the blank detection.

– EtFOSA was detected at concentrations of 0.0012 ug/L and 0.0013 ug/L in the instrument blanks associated with the analysis of sample LORNG_GC_BW002S_05082024. EtFOSA was not detected in the associated sample and data usability is not adversely affected by the blank detections.

7.1.9 LABORATORY CONTROL SAMPLE ACCURACY

Low level LCS (LLCS) and LCS were included with each extraction batch, (LLCS) spike concentrations were twice the LOQ, and LCS and LLCS recoveries were within the quality assurance project plan (QAPP)-specified 40 to 150% interim limits, with the following exception:

– Perfluorononanesulfonic acid (PFNS) recovery was high at 161% in the LLCS associated with the analysis of samples LORNG_GC_BW001_05062024, LORNG_JBW7327_265_05062024, LORNG_JMW-0241A_05062024, LORNG_JBW7327_158_05032024, LORNG_MMW0006_05062024, LORNG_UNK-23001_05072024, and LORNG_USMW024_05032024; equipment blanks LORNG_EB001_05062024 and LORNG_EB002_05062024; and field blank LORNG_FB02_05032024. PFNS was not detected in the associated samples, WSP does not qualify data from equipment or field blanks, and data usability is not adversely affected by potential high analytical bias.

7.1.10 MATRIX SPIKE ACCURACY AND PRECISION

SGS performed MS and MSD analyses on samples LORNG_JMW0992_05072024, LORNG_MMW0326_05062024, LORNG_JPZ7808_05062024, and LORNG_MMW0006_05062024. MS and MSD recoveries were within the QAPP-specified 40 to 150% limits and RPDs between MS and MSD results were less than the QAPP-specified maximum of 30%, with the following exception:

- The RPD between ethyl perfluorooctanesulfonamidoacetic acid (EtFOSAA) results was high at 38% in the MS and MSD performed on sample LORNG_MMW0006_05062024. EtFOSAA was not detected in the unspiked native sample and data usability is not adversely affected by potential analytical imprecision.

7.1.11 DUPLICATE PRECISION

SGS performed a duplicate analysis on sample LORNG_MMW0018B_05072024. RPDs between primary and laboratory duplicate results were less than the QAPP-specified maximum of 30%.

7.1.12 EXTRACTED INTERNAL STANDARD ACCURACY

EIS recoveries were within the QAPP-specified 20 to 150% interim limits, with the following exceptions:

- Recoveries of the EISs $^{13}C_2$-4:2 fluorotelomer sulfonic acid (FTS) and $^{13}C_2$-6:2 FTS were high at 243% and 151%, respectively, in the initial analysis of sample LORNG_NP_BW001D_05072024. Data limitations are summarized below.
  - WSP J qualified the detected 6:2 FTS result from the associated sample due to high EIS recovery. (J, EISH)
  - 4:2 FTS was not reported from the associated analysis and data usability is not adversely affected by high EIS recoveries.
- Recoveries of the EISs $^{13}C_2$-6:2 FTS (156%), $^{13}C_2$-8:2 FTS (162%), and $^{13}C_4$-perfluorobutanoic acid (PFBA [9%]) were outside limits in the initial analysis of sample LORNG_BW16002_05032024. 6:2 FTS and 8:2 FTS were not detected in the associated sample and PFBA was not reported from the associated analysis. Data usability is not adversely affected by low or high EIS recoveries.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 155% in sample LORNG_JPZ1382_05062024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 162% in sample LORNG_JBW7752_05072024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 157% in sample LORNG_JMW-0241A_05062024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 155% in sample LORNG_JBW7327_158_05032024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 160% in sample LORNG_MMW0006_05062024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 179% in sample LORNG_UNK-23001_05072024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.
- Recovery of the EIS $^{13}C_2$-4:2 FTS was high at 160% in sample LORNG_USMW024_05032024. 4:2 FTS was not detected in the associated sample and data usability is not adversely affected by high EIS recovery.

7.1.13 NON-EXTRACTED INTERNAL STANDARD ACCURACY

NIS recoveries were within the method-specified 50 to 200% limits.

7.1.14 STAGE 4 VALIDATION

WSP performed Stage 4 validation on samples LORNG_BW16002_05032024, LORNG_JPZ1382_05062024, LORNG_MMW0326_05062024, LORNG_OW01003_05072024, LORNG_USMW015_05032024, LORNG_BW18006_05062024, LORNG_JBW7752_05072024, LORNG_JPZ7808_05062024, LORNG_OW02001_05062024, LORNG_BW16001_05062024, LORNG_GC_BW001_05062024, LORNG_JBW7327_265_05062024,

LORNG_JMW-0241A_05062024, LORNG_JBW7327_158_05032024, LORNG_MMW0006_05062024, LORNG_UNK-23001_05072024, LORNG_USMW024_05032024, LORNG_BB_BW002_05072024, LORNG_JMW0992_05072024, LORNG_MMW0018B_05072024, LORNG_NP_BW001D_05072024, LORNG_NP_BW001S_05072024, LORNG_BW02002_05082024, LORNG_BW03001_05072024, and LORNG_BW05010_05072024. Reported results matched the raw analytical data and target analytes were correctly identified.

7.1.15 DATA REPORTING AND ANALYTICAL PROCEDURES

SGS J qualified analytes with detected concentrations less than the LOQ. WSP agrees that these results are quantitatively uncertain and has maintained SGS's J qualifiers. (J, TR)

8 FIELD DUPLICATE PRECISION

WSP collected field duplicates with samples LORNG_BW16001_05062024 (LORNG_BW16001_05062024FD), LORNG_MMW0018B_05072024 (LORNG_MMW0018B_05072024FD), and LORNG_MMW0007A_05082024 (LORNG_MMW0007A_05082024FD). Precision between primary and field duplicate results was acceptable, with RPDs less than 30% or differences between concentrations less than the average LOQ. Detections in the field duplicate pairs are summarized in Table 2.

9 SUMMARY AND CONCLUSIONS

WSP evaluated a total of 1,560 data records from field samples during this validation. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- U: WSP U qualified 5 records (0.32%) as non-detects due to detections in an associated equipment blank.
- J/UJ: WSP J qualified 114 records (7.3%) due to high or low ICV recoveries, high EIS recovery, or detected concentrations less than the LOQ.

Data qualified during validation are summarized in Table 3.

10 REFERENCES

WSP, 2024. Draft Quality Program Plan Addendum, Revision 1, Remedial Investigation, Per- and Polyfluoroalkyl Substances Response, Former Loring Air Force Base, Limestone Maine, April.

DoD, 2019. DoD General Data Validation Guidelines, September.

DoD, 2021. DoD Department of Energy Consolidated QSM for Environmental Laboratories Version 5.4, October.

DoD, 2022b. Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24, October.

EPA, 2023. 4th Draft EPA Method 1633, Analysis of PFAS in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, July.

TABLE(S)

Table 1 -Sample and Analysis Summary
Data Validation Report
May 2025 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

					Method Class		PFAS
					Analysis Method		E1633DR
					Fraction		T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC15544	BW16001	LORNG_BW16001_05062024	FC15544-10	5/6/2024	WG	N	40
		LORNG_BW16001_05062024FD	FC15544-11	5/6/2024	WG	FD	40
	BW16002	LORNG_BW16002_05032024	FC15544-1	5/3/2024	WG	N	40
	BW18006	LORNG_BW18006_05062024	FC15544-6	5/6/2024	WG	N	40
	FIELDQC	LORNG_EB001_05062024	FC15544-17	5/6/2024	WQ	EB	40
		LORNG_EB002_05062024	FC15544-12	5/6/2024	WQ	EB	40
		LORNG_FB02_05032024	FC15544-13	5/3/2024	WQ	AB	40
	GC_BW001	LORNG_GC_BW001_05062024	FC15544-14	5/6/2024	WG	N	40
	JBW7327	LORNG_JBW7327_158_05032024	FC15544-18	5/3/2024	WG	N	40
		LORNG_JBW7327_265_05062024	FC15544-15	5/6/2024	WG	N	40
	JBW7752	LORNG_JBW7752_05072024	FC15544-7	5/7/2024	WG	N	40
	JMW-0241A	LORNG_JMW-0241A_05062024	FC15544-16	5/6/2024	WG	N	40
	JPZ1382	LORNG_JPZ1382_05062024	FC15544-2	5/6/2024	WG	N	40
	JPZ7808	LORNG_JPZ7808_05062024	FC15544-8	5/6/2024	WG	N	40
	MMW0006	LORNG_MMW0006_05062024	FC15544-19	5/6/2024	WG	N	40
	MMW0326	LORNG_MMW0326_05062024	FC15544-3	5/6/2024	WG	N	40
	OW01003	LORNG_OW01003_05072024	FC15544-4	5/7/2024	WG	N	40
	OW02001	LORNG_OW02001_05062024	FC15544-9	5/6/2024	WG	N	40
	UNK-23001	LORNG_UNK-23001_05072024	FC15544-20	5/7/2024	WG	N	40
	USMW015	LORNG_USMW015_05032024	FC15544-5	5/3/2024	WG	N	40
	USMW024	LORNG_USMW024_05032024	FC15544-21	5/3/2024	WG	N	40
FC15576	BB_BW002	LORNG_BB_BW002_05072024	FC15576-1	5/7/2024	WG	N	40
	BW02001	LORNG_BW02001_05082024	FC15576-19	5/8/2024	WG	N	40
	BW02002	LORNG_BW02002_05082024	FC15576-8	5/8/2024	WG	N	40
	BW03001	LORNG_BW03001_05072024	FC15576-9	5/7/2024	WG	N	40
	BW05010	LORNG_BW05010_05072024	FC15576-10	5/7/2024	WG	N	40
	BW22001	LORNG_BW22001_05072024	FC15576-11	5/7/2024	WG	N	40
	FIELDQC	LORNG_EB003_05072024	FC15576-2	5/7/2024	WQ	EB	40
		LORNG_EB004_05092024	FC15576-12	5/9/2024	WQ	EB	40
		LORNG_EB005_05092024	FC15576-15	5/9/2024	WQ	EB	40
		LORNG_EB006_05092024	FC15576-16	5/9/2024	WQ	EB	40
	GC_BW002S	LORNG_GC_BW002S_05082024	FC15576-20	5/8/2024	WG	N	40
	JBW7314	LORNG_JBW7314_05072024	FC15576-13	5/7/2024	WG	N	40
	JMW0941	LORNG_JMW0941_05082024	FC15576-17	5/8/2024	WG	N	40
	JMW0992	LORNG_JMW0992_05072024	FC15576-3	5/7/2024	WG	N	40

Prepared by:AKN
Date:9/11/24
Checked by:CR
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Table 1 -Sample and Analysis Summary
Data Validation Report
May 2025 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

						Method Class	PFAS
						Analysis Method	E1633DR
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
	LF2MW3	LORNG_LF2MW3_05082024	FC15576-21	5/8/2024	WG	N	40
	MMW0002	LORNG_MMW0002_05082024	FC15576-18	5/8/2024	WG	N	40
	MMW0007A	LORNG_MMW0007A_05082024	FC15576-22	5/8/2024	WG	N	40
		LORNG_MMW0007A_05082024FD	FC15576-23	5/8/2024	WG	FD	40
	MMW0015	LORNG_MMW0015_05082024	FC15576-24	5/8/2024	WG	N	40
	MMW0018B	LORNG_MMW0018B_05072024	FC15576-4	5/7/2024	WG	N	40
		LORNG_MMW0018B_05072024FD	FC15576-5	5/7/2024	WG	FD	40
	NP_BW001D	LORNG_NP_BW001D_05072024	FC15576-6	5/7/2024	WG	N	40
	NP_BW001S	LORNG_NP_BW001S_05072024	FC15576-7	5/7/2024	WG	N	40
	OW16003	LORNG_OW16003_05072024	FC15576-14	5/7/2024	WG	N	40
	WBGB_BW001	LORNG_WBGB_BW001_05082024	FC15576-25	5/8/2024	WG	N	40

Notes:

T = Total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = L

WG = Groundwater, WP = Potable Water; WQ = Water Quality Control; WS = Surface Water; WT = Process Water

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:9/11/24
Checked by:CR
Date:9/11/24

Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

		SDG		FC15544									
		Location		BW16001		BW16002	BW18006	FIELDQC			GC_BW001	JBW	
		Sample Date		5/6/2024		5/3/2024	5/6/2024	5/6/2024		5/3/2024	5/6/2024	5/3/2024	
		Sample ID		LORNG_BW16001_05062024	LORNG_BW16001_05062024FD	LORNG_BW16002_05032024	LORNG_BW18006_05062024	LORNG_EB001_05062024	LORNG_EB002_05062024	LORNG_FB02_05032024	LORNG_GC_BW001_05062024	LORNG_JBW7327_158_05032024	
		QC Code		N	FD	N	N	EB	EB	AB	N	N	
Class	Fraction	Analyte Name	Units	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	Result Qualifier	
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8 U	3.8 U	33 U	3.6 J	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9 U	1.9 U	1.8 U	4.4 J	1.9 U	1.9 U	1.8 U	1.8 U	10.1	
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9 U	1.9 U	2.1 J	2.6 J	1.9 U	1.9 U	1.8 U	1.8 U	10.1	
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9 U	1.9 U	1.8 U	2.1 J	1.9 U	1.9 U	1.8 U	1.8 U	3.9	
		Perfluorooctanoic acid (PFOA)	NG/L	0.94 U	0.94 U	0.91 U	2 J	0.96 U	0.94 U	0.91 U	0.91 U	7.9	
		Perfluorononanoic acid (PFNA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorodecanoic acid (PFDA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9 U	1.9 U	1.8 U	0.56 J	1.9 U	1.9 U	1.8 U	1.8 U	1.8 J	
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	1.5 J	
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9 U	1.9 U	0.86 J	5.6	1.9 U	1.9 U	1.8 U	1.8 U	28	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9 U	1.9 U	1.8 U	2.1 J	1.9 U	1.9 U	1.8 U	1.8 U	8.6	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5 U	7.5 U	7.3 U	7.5 U	7.7 U	7.5 U	7.3 U	7.3 U	7.3 U	
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5 U	7.5 U	7.3 U	7.5 U	7.7 U	7.5 U	7.3 U	7.3 U	7.3 J	
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5 U	7.5 U	7.3 U	7.5 U	7.7 U	7.5 U	7.3 U	7.3 U	7.3 U	
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8 U	3.8 U	3.6 UJ	3.8 U	3.8 U	3.8 U	3.6 U	3.6 UJ	3.6 UJ	
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19 U	19 U	18 U	19 U	19 U	19 U	18 U	18 U	18 U	
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19 U	19 U	18 U	19 U	19 U	19 U	18 U	18 U	18 U	
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8 U	3.8 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.6 U	
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9 U	1.9 U	17 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.8 U	

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Checked by:CR
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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG				FC15544																	
Location				BW16001		BW16002		BW18006		FIELDQC						GC_BW001		JBW	
Sample Date				5/6/2024		5/3/2024		5/6/2024		5/6/2024				5/3/2024		5/6/2024		5/3/2024	
Sample ID				LORNG_BW16001_05062024		LORNG_BW16002_05032024		LORNG_BW18006_05062024		LORNG_EB001_05062024		LORNG_EB002_05062024		LORNG_FB02_05032024		LORNG_GC_BW001_05062024		LORNG_JBW7327_158_05032024	
QC Code				N		FD		N		N		EB		EB		AB		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.8	U	3.8	U	3.6	U	3.6	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.8	U	3.8	U	3.6	U	3.6	U	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.8	U	3.8	U	3.6	U	3.6	U	3.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.8	U	3.6	U	3.8	U	3.8	U	3.8	U	3.6	U	3.6	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.9	U	1.9	U	1.8	U	1.8	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.4	U	9.1	U	9.4	U	9.6	U	9.4	U	9.1	U	9.1	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	18	U	19	U	19	U	19	U	18	U	18	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	18	U	19	U	19	U	19	U	18	U	18	U	18	U

Notes:

T = total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

Prepared by: AKN
Date: 9/11/24
Checked by:CR
Date:9/11/24

Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG						FC15544														
Location				7327		JBW7752		JMW-0241A		JPZ1382		JPZ7808		MMW0006		MMW0326		OW01003		OW02001	
Sample Date				5/6/2024		5/7/2024		5/6/2024		5/6/2024		5/6/2024		5/6/2024		5/6/2024		5/7/2024		5/6/2024	
Sample ID				LORNG_JBW7327_265_05062024		LORNG_JBW7752_05072024		LORNG_JMW-0241A_05062024		LORNG_JPZ1382_05062024		LORNG_JPZ7808_05062024		LORNG_MMW0006_05062024		LORNG_MMW0326_05062024		LORNG_OW01003_05072024		LORNG_OW02001_05062024	
QC Code				N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	2.8	J	3.9	U	3.6	U	3.6	U	3.6	U	2.3	J	3.6	U	3.8	U
		Perfluoropentanoic acid (PFPeA)	NG/L	10.5		1.2	J	2	U	1.8	U	1.8	U	1.8	U	3.2	J	1.8	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	10		1.1	J	2	U	1.8	U	1.8	U	1.8	U	1.7	J	1.8	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	3.8		0.62	J	0.82	J	1.8	U	1.8	U	0.71	J	0.76	J	1.8	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	9		0.66	J	0.87	J	0.62	J	0.91	U	1.4	J	1.2	J	0.91	U	0.94	U
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.4	J	0.52	J	2	U	1.8	U	1.8	U	1.8	U	0.67	J	1.8	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	2.3	J	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	36.1		3.2	J	0.84	J	1.5	J	2.9	J	1.9	J	2.1	J	2	J	1.9	U
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	10.5		2.4	J	2	U	1.8	U	1.8	U	2.6	J	2.9	J	0.82	J	1.9	U
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.3	U	7.8	U	7.3	U	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.3	U	7.8	U	7.3	U	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.3	U	7.8	U	7.3	U	7.3	U	7.3	U	7.3	U	7.3	U	7.5	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	UJ	3.6	U	3.9	UJ	3.6	U	3.6	U	3.6	UJ	3.6	U	3.6	U	3.8	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	20	U	18	U	18	U	18	U	18	U	18	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	20	U	18	U	18	U	18	U	18	U	18	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U

Prepared by: AKN
Date: 9/11/24
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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG						FC15544															
Location				7327		JBW7752		JMW-0241A		JPZ1382		JPZ7808		MMW0006		MMW0326		OW01003		OW02001	
Sample Date				5/6/2024		5/7/2024		5/6/2024		5/6/2024		5/6/2024		5/6/2024		5/6/2024		5/7/2024		5/6/2024	
Sample ID				LORNG_JBW7327_265_05062024		LORNG_JBW7752_05072024		LORNG_JMW-0241A_05062024		LORNG_JPZ1382_05062024		LORNG_JPZ7808_05062024		LORNG_MMW0006_05062024		LORNG_MMW0326_05062024		LORNG_OW01003_05072024		LORNG_OW02001_05062024	
QC Code				N		N		N		N		N		N		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.6	U	3.9	U	3.6	U	3.6	U	3.6	U	3.6	U	3.6	U	3.8	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	2	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.4	U	9.1	U	9.8	U	9.1	U	9.1	U	9.1	U	9.1	U	9.1	U	9.4	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	20	U	18	U	18	U	18	U	18	U	18	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	20	U	18	U	18	U	18	U	18	U	18	U	19	U

Notes:

T = total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG																	
			Location	FIELDQC								GC_BW002S		JBW7314		JMW0941		JMW0992		LF2MW3	
			Sample Date	5/7/2024		5/9/2024						5/8/2024		5/7/2024		5/8/2024		5/7/2024		5/8/2024	
			Sample ID	LORNG_EB003_05072024		LORNG_EB004_05092024		LORNG_EB005_05092024		LORNG_EB006_05092024		LORNG_GC_BW002S_05082024		LORNG_JBW7314_05072024		LORNG_JMW0941_05082024		LORNG_JMW0992_05072024		LORNG_LF2MW3_05082024	
			QC Code	EB		EB		EB		EB		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	0.97	J	2	U	2	U	1.9	U
		Perfluorohexanoic acid (PFHxA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	0.74	J	2	U	2	U	1.9	U
		Perfluoroheptanoic acid (PFHpA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	0.63	J	2	U	2	U	1.9	U
		Perfluorooctanoic acid (PFOA)	NG/L	0.77	J	1	U	0.97	U	0.98	U	0.9	U	1.1	J	1	U	1	U	1.2	J
		Perfluorononanoic acid (PFNA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorodecanoic acid (PFDA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorododecanoic acid (PFDoA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2.1	J	2	U	1.8	J	3	J
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	0.56	J	2	U	1.9	U	2	U	1.8	U	3.6	J	2	U	2	U	4.4	
		Perfluorononanesulfonic acid (PFNS)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.9	U	8	U	7.8	U	7.8	U	7.2	U	7.8	U	8.1	U	8	U	7.4	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.9	U	8	U	7.8	U	7.8	U	7.2	U	7.8	U	8.1	U	8	U	7.4	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.9	U	8	U	7.8	U	7.8	U	7.2	U	7.8	U	8.1	U	8	U	7.4	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	2	U	1.3	J	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	UJ	4	UJ	4	U	3.7	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	20	U	20	U	19	U	20	U	18	U	20	U	20	U	20	U	19	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	20	U	20	U	19	U	20	U	18	U	20	U	20	U	20	U	19	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U

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Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG																	
			Location	FIELDQC								GC_BW002S		JBW7314		JMW0941		JMW0992		LF2MW3	
			Sample Date	5/7/2024		5/9/2024						5/8/2024		5/7/2024		5/8/2024		5/7/2024		5/8/2024	
			Sample ID	LORNG_EB003_05072024		LORNG_EB004_05092024		LORNG_EB005_05092024		LORNG_EB006_05092024		LORNG_GC_BW002S_05082024		LORNG_JBW7314_05072024		LORNG_JMW0941_05082024		LORNG_JMW0992_05072024		LORNG_LF2MW3_05082024	
			QC Code	EB		EB		EB		EB		N		N		N		N		N	
Class	Fraction	Analyte Name	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	4	U	4	U	3.9	U	3.9	U	3.6	U	3.9	U	4	U	4	U	3.7	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	2	U	2	U	1.9	U	2	U	1.8	U	2	U	2	U	2	U	1.9	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.9	U	10	U	9.7	U	9.8	U	9	U	9.8	U	10	U	10	U	9.3	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	20	U	20	U	19	U	20	U	18	U	20	U	20	U	20	U	19	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	20	U	20	U	19	U	20	U	18	U	20	U	20	U	20	U	19	U

Notes:

T = total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

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Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG	FC15576																	FC15576		
			Location	MMW0002		MMW0007A				MMW0015		MMW0018B				NP_BW001D		NP_BW001S		OW16003			
			Sample Date	5/8/2024		5/8/2024				5/8/2024		5/7/2024				5/7/2024		5/7/2024		5/7/2024			
			Sample ID	LORNG_MMW0002_05082024		LORNG_MMW0007A_05082024		LORNG_MMW0007A_05082024FD		LORNG_MMW0015_05082024		LORNG_MMW0018B_05072024		LORNG_MMW0018B_05072024FD		LORNG_NP_BW001D_05072024		LORNG_NP_BW001S_05072024		LORNG_OW16003_05072024			
			QC Code	N		N		FD		N		N		FD		N		N		N			
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier		
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	5.7	J		
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	5.6	J	5.3	J	1.9	U	2	U	2	U	2	U	2	U	0.97	J		
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	4.8		4.8		1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	2.4	J	2.5	J	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorooctanoic acid (PFOA)	NG/L	0.96	U	2.2	J	2.7	J	0.65	J	0.99	U	0.99	U	1	U	1	U	0.91	J		
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	0.92	J	0.95	J	1.9	U	2	U	2	U	2	U	2	U	0.67	J		
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.8	U	1	J	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	9.5		9		0.7	J	0.73	J	0.92	J	2	U	2	U	3	J		
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	8.2		9.2		1.9	U	5.6		4.8		2	U	0.71	J	0.89	J		
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.7	U	7.3	U	6.8	U	7.5	U	7.9	U	7.9	U	80	U	8	U	8	U		
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.7	U	7.3	U	6.8	U	7.5	U	7.9	U	7.9	U	35.6	J	8	U	8	U		
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.7	U	7.3	U	6.8	U	7.5	U	7.9	U	7.9	U	8	U	8	U	8	U		
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.8	UJ	3.7	U	3.4	U	3.7	U	4	UJ	4	UJ	4	UJ	4	UJ	4	UJ		
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	18	U	17	U	19	U	20	U	20	U	20	U	20	U	20	U		
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	18	U	17	U	19	U	20	U	20	U	20	U	20	U	20	U		
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U		
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U		

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Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG	FC15576															FC15576		
			Location	MMW0002		MMW0007A				MMW0015		MMW0018B				NP_BW001D		NP_BW001S		OW16003	
			Sample Date	5/8/2024		5/8/2024				5/8/2024		5/7/2024				5/7/2024		5/7/2024		5/7/2024	
			Sample ID	LORNG_MMW0002_05082024		LORNG_MMW0007A_05082024		LORNG_MMW0007A_05082024FD		LORNG_MMW0015_05082024		LORNG_MMW0018B_05072024		LORNG_MMW0018B_05072024FD		LORNG_NP_BW001D_05072024		LORNG_NP_BW001S_05072024		LORNG_OW16003_05072024	
			QC Code	N		N		FD		N		N		FD		N		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U
		11-Chlororeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.8	U	3.7	U	3.4	U	3.7	U	4	U	4	U	4	U	4	U	4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.8	U	1.7	U	1.9	U	2	U	2	U	2	U	2	U	2	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.6	U	9.2	U	8.5	U	9.3	U	9.9	U	9.9	U	10	U	10	U	10	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	18	U	17	U	19	U	20	U	20	U	20	U	20	U	20	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	18	U	17	U	19	U	20	U	20	U	20	U	20	U	20	U

Notes:

T = total

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

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Date: 9/11/24
Checked by:CR
Date:9/11/24

Table 2 - Summary of Analytical Results
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG		
			Location	WBGB_BW001	
			Sample Date	5/8/2024	
			Sample ID	LORNG_WBGB_BW001_05082024	
			QC Code	N	
Class	Fraction	Analyte Name	Units	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.4	U
		Perfluoropentanoic acid (PFPeA)	NG/L	2.7	J
		Perfluorohexanoic acid (PFHxA)	NG/L	2.6	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.3	J
		Perfluorooctanoic acid (PFOA)	NG/L	1.6	J
		Perfluorononanoic acid (PFNA)	NG/L	1.7	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.7	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.7	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.7	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.7	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.7	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.5	J
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.4	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.7	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	6.7	
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.7	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.7	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.4	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	6.8	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	6.8	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	6.8	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.7	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.4	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.4	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.4	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.4	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	17	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	17	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.7	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.4	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.7	U

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Data Validation Report
May 2024 Groundwater
Loring PFAS RI
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Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

			SDG		
			Location	WBGB_BW001	
			Sample Date	5/8/2024	
			Sample ID	LORNG_WBGB_BW001_05082024	
			QC Code	N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.4	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.4	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.4	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.4	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.7	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	8.5	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	17	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	17	U

Notes:
T = total
N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank
NG/L = nanograms per liter
J = Analyte is estimated
U = Analyte not detected at the associated detection limits
UJ = Analyte not detected; reporting limits estimated

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Table 3 - Data Qualification Summary
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15544	E1633DR	T	FC15544-1	LORNG_BW16002_05032024	Perfluorohexanoic acid (PFHxA)	2.1	J	2.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.86	J	0.86	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15544-6	LORNG_BW18006_05062024	Perfluorobutanoic acid (PFBA)	3.6	J	3.6	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	4.4	J	4.4	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2	J	2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.56	J	0.56	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.1	J	2.1	J	TR	NG/L
			FC15544-14	LORNG_GC_BW001_05062024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15544-18	LORNG_JBW7327_158_05032024	Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.8	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1.5	J	1.5	J	TR	NG/L
					1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	7.3	J	7.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15544-15	LORNG_JBW7327_265_05062024	Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.4	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	2.3	J	2.3	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15544-7	LORNG_JBW7752_05072024	Perfluorobutanoic acid (PFBA)	2.8	J	2.8	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.1	J	1.1	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.62	J	0.62	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.66	J	0.66	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.52	J	0.52	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.2	J	3.2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.4	J	2.4	J	TR	NG/L

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Table 3 - Data Qualification Summary
Data Validation Report
May 2024 Groundwater
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Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC15544	E1633DR	T	FC15544-16	LORNG_JMW-0241A_05062024	Perfluoroheptanoic acid (PFHpA)	0.82	J	0.82	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.87	J	0.87	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.84	J	0.84	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15544-2	LORNG_JPZ1382_05062024	Perfluorooctanoic acid (PFOA)	0.62	J	0.62	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.5	J	TR	NG/L
			FC15544-8	LORNG_JPZ7808_05062024	Perfluorohexanesulfonic acid (PFHxS)	2.9	J	2.9	J	TR	NG/L
			FC15544-19	LORNG_MMW0006_05062024	Perfluoroheptanoic acid (PFHpA)	0.71	J	0.71	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.4	J	1.4	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.9	J	1.9	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.6	J	2.6	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15544-3	LORNG_MMW0326_05062024	Perfluorobutanoic acid (PFBA)	2.3	J	2.3	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	3.2	J	3.2	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	1.7	J	1.7	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.76	J	0.76	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.67	J	0.67	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J	TR	NG/L
			FC15544-4	LORNG_OW01003_05072024	Perfluorohexanesulfonic acid (PFHxS)	2	J	2	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.82	J	0.82	J	TR	NG/L
			FC15544-20	LORNG_UNK-23001_05072024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
			FC15544-5	LORNG_USMW015_05032024	Perfluorooctanesulfonic acid (PFOS)	0.77	J	0.77	J	TR	NG/L
			FC15544-21	LORNG_USMW024_05032024	Perfluorooctanoic acid (PFOA)	0.75	J	0.75	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.66	J	0.66	J	TR	NG/L

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Data Validation Report
May 2024 Groundwater
Loring PFAS RI
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Limestone, Maine
Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
			[illegible]	[illegible]	Perfluorooctanesulfonic acid (PFOS)	2.8	J	2.8	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.6	U	3.6	UJ	IVD	NG/L
FC15576	E1633DR	T	FC15576-1	LORNG_BB_BW002_05072024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-19	LORNG_BW02001_05082024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15576-8	LORNG_BW02002_05082024	Perfluorooctanoic acid (PFOA)	0.86	J	0.86	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.6	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.89	J	0.89	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15576-9	LORNG_BW03001_05072024	Perfluorooctanoic acid (PFOA)	0.99	J	0.99	U	EBL	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-10	LORNG_BW05010_05072024	Perfluorobutanoic acid (PFBA)	2.9	J	2.9	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.77	J	0.77	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.85	J	0.85	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3.9	J	3.9	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.5	J	3.5	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-11	LORNG_BW22001_05072024	Perfluorooctanoic acid (PFOA)	0.65	J	0.65	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2.1	J	2.1	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-13	LORNG_JBW7314_05072024	Perfluoropentanoic acid (PFPeA)	0.97	J	0.97	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	0.74	J	0.74	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	0.63	J	0.63	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.1	J	1.1	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	2.1	J	2.1	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	3.6	J	3.6	J	TR	NG/L

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Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.9	U	3.9	UJ	IVD	NG/L
			FC15576-17	LORNG_JMW0941_05082024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
FC15576	E1633DR	T	FC15576-3	LORNG_JMW0992_05072024	Perfluorooctanoic acid (PFOA)	1	J	1	U	EBL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	1.8	J	1.8	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	2	J	2	U	EBL	NG/L
			FC15576-21	LORNG_LF2MW3_05082024	Perfluorooctanoic acid (PFOA)	1.2	J	1.2	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3	J	3	J	TR	NG/L
			FC15576-18	LORNG_MMW0002_05082024	N-ethyl perfluorooctanesulfonamide (NEtFOSA)	3.8	U	3.8	UJ	IVD	NG/L
			FC15576-22	LORNG_MMW0007A_05082024	Perfluoropentanoic acid (PFPeA)	5.6	J	5.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.4	J	2.4	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.2	J	2.2	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.92	J	0.92	J	TR	NG/L
					Perfluoropentanesulfonic acid (PFPeS)	1	J	1	J	TR	NG/L
			FC15576-23	LORNG_MMW0007A_05082024FD	Perfluoropentanoic acid (PFPeA)	5.3	J	5.3	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	2.5	J	2.5	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	2.7	J	2.7	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.95	J	0.95	J	TR	NG/L
			FC15576-24	LORNG_MMW0015_05082024	Perfluorooctanoic acid (PFOA)	0.65	J	0.65	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.7	J	0.7	J	TR	NG/L
			FC15576-4	LORNG_MMW0018B_05072024	Perfluorooctanoic acid (PFOA)	0.99	J	0.99	U	EBL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.73	J	0.73	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-5	LORNG_MMW0018B_05072024FD	Perfluorooctanoic acid (PFOA)	0.99	J	0.99	U	EBL	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	0.92	J	0.92	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-6	LORNG NP BW001D 05072024	1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	35.6	=	35.6	J	EISH	NG/L

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May 2024 Groundwater
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Spring 2024 Groundwater - SDGs FC15544 and FC15576

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-7	LORNG_NP_BW001S_05072024	Perfluorooctanesulfonic acid (PFOS)	0.71	J	0.71	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
FC15576	E1633DR	T	FC15576-14	LORNG_OW16003_05072024	Perfluorobutanoic acid (PFBA)	5.7	J	5.7	J	TR	NG/L
					Perfluoropentanoic acid (PFPeA)	0.97	J	0.97	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	0.91	J	0.91	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	0.67	J	0.67	J	TR	NG/L
					Perfluorohexanesulfonic acid (PFHxS)	3	J	3	J	TR	NG/L
					Perfluorooctanesulfonic acid (PFOS)	0.89	J	0.89	J	TR	NG/L
					N-ethyl perfluorooctanesulfonamide (NEtFOSA)	4	U	4	UJ	IVD	NG/L
			FC15576-25	LORNG_WBGB_BW001_05082024	Perfluoropentanoic acid (PFPeA)	2.7	J	2.7	J	TR	NG/L
					Perfluorohexanoic acid (PFHxA)	2.6	J	2.6	J	TR	NG/L
					Perfluoroheptanoic acid (PFHpA)	1.3	J	1.3	J	TR	NG/L
					Perfluorooctanoic acid (PFOA)	1.6	J	1.6	J	TR	NG/L
					Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.5	J	TR	NG/L

Notes:

T = total

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

EBL = Analyte detected in equipment blank; concentration in samples is less than LOQ

EISH = High extracted internal standard recovery

IVD = Initial calibration verification outside of limits

TR = Analyte concentration is less than LOQ

Prepared by:AKN
Date:9/11/24
Checked by:CR
Date:9/11/24

Table 4 - Field Duplicate Summary
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD	Flag
FC15544	LORNG_BW16001_05062024	LORNG_BW16001_05062024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.94	U	0.94	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.9	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.8	U	3.8	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.5	U	7.5	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.9	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.8	U	3.8	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	19	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	19	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.9	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.9	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.8	U	3.8	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.8	U	3.8	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.8	U	3.8	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.8	U	3.8	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.9	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.4	U	9.4	U	NC	

Prepared by: AKN 9/11/24
Checked by:CR 9/11/24

Table 4 - Field Duplicate Summary
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD	Flag
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	19	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	19	U	19	U	NC	
FC15576	LORNG_MMW0007A_05082024	LORNG_MMW0007A_05082024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.7	U	3.4	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	5.6	J	5.3	J	NC	TR
				Perfluorohexanoic acid (PFHxA) (NG/L)	4.8		4.8		0	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2.4	J	2.5	J	NC	TR
				Perfluorooctanoic acid (PFOA) (NG/L)	2.2	J	2.7	J	NC	TR
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	0.92	J	0.95	J	NC	TR
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	1	J	3.4	U	NC	TR
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	9.5		9		5	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	8.2		9.2		11	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.7	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.7	U	3.4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	6.8	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	6.8	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	6.8	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.7	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.7	U	3.4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.7	U	3.4	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.7	U	3.4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.7	U	3.4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	17	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	17	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.7	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.7	U	3.4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.7	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.7	U	3.4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.7	U	3.4	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.7	U	3.4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.7	U	3.4	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD	Flag
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.7	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.2	U	8.5	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	17	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	17	U	NC	
FC15576	LORNG_MMW0018B_05072024	LORNG_MMW0018B_05072024FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	4	U	4	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	2	U	2	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	2	U	2	U	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	2	U	2	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.99	U	0.99	U	NC	EBL
				Perfluorononanoic acid (PFNA) (NG/L)	2	U	2	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	2	U	2	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	2	U	2	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	2	U	2	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	2	U	2	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	2	U	2	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	2	U	2	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	4	U	4	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	0.73	J	0.92	J	NC	TR
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	2	U	2	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	5.6		4.8		15	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	2	U	2	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	2	U	2	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	4	U	4	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.9	U	7.9	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	2	U	2	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	4	UJ	4	UJ	NC	IVD
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	4	U	4	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	4	U	4	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	20	U	20	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	20	U	20	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	2	U	2	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	4	U	4	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	2	U	2	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	4	U	4	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	4	U	4	U	NC	

Table 4 - Field Duplicate Summary
Data Validation Report
May 2024 Groundwater
Loring PFAS RI
Former Loring Air Force Base
Limestone, Maine
Spring 2024 Groundwater Program - SDGs FC15544 and FC15576

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD	Flag
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	4	U	4	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	4	U	4	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	2	U	2	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.9	U	9.9	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	20	U	20	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	20	U	20	U	NC	

Notes:

NC = not calculable, RPD = relative perent difference

NG/L = nanograms per liter

J = Analyte is estimated

U = Analyte not detected at the associated detection limits

UJ = Analyte not detected; reporting limits estimated

EBL = Analyte detected in equipment blank; concentration in samples is less than LOQ

IVD = Initial calibration verification outside of limits

TR = Analyte concentration is less than LOQ

Data Validation Report
Loring PFAS Remedial Investigation
May 2025 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Residential water samples were collected at the Former Loring Air Force Base in Limestone, Maine, in May 2025 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to SGS North America (SGS) located in Orlando, Florida, for analysis.

SGS analyzed seven samples and one field duplicate for PFAS by Method 1633, liquid chromatography tandem mass spectrometry compliant with Table B-24 of the United States Department of Defense (USDoD) Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4 (USDoD, 2021).

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 4 – Summary of Field Duplicate Results
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Final Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2025) and the final Method 1633 (USEPA, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). PFAS data were validated using Stage 4 procedures. Validation checklists, documentation of sample recalculations, and qualification justification documentation are stored in the WSP project file.

Stage 4 data validation includes review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, extracted internal standards [EIS] and non-extracted internal standards [NIS], QC sample frequency checks, initial calibration summaries, continuing calibration verification summaries, instrument mass calibration /tuning summaries, and sample preparation logs, as well as review of raw data and chromatograms, target analyte identification confirmation, and recalculation of QC and sample results.

Data review and qualification actions were completed based on DoD Data Validation Guidelines Module 6 for PFAS (USDoD, 2022), general procedures described in National USEPA Data Review and Validation Guidelines (USEPA, 2020), and method specifications in the DoD QSM 5.4 and/or the final Method 1633. QC limits presented in the DoD QSM 5.4, Method 1633, and/or the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions, and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

LCH = Laboratory control sample recovery exceeds quality control limits

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the DoD QSM 5.4, the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 PFAS

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
* QC Blanks
* Instrument Performance/Tuning
  LCS
* MS/MSD
* Field Duplicates
* Extracted Internal Standard Recovery
* Reporting Limits

* Electronic Data Verification
* Initial Calibration
* Continuing Calibration
* Compound Identification and Quantitation
* Raw Data Review and Calculation Checks
* Miscellaneous

* QC criteria were met for this parameter.

2.1.1 Laboratory Control Sample (LCS)

The percent recovery of Perfluorooctanesulfonic acid (PFOS) was 162% and was above the upper control limit of 150 in the LCS associated with a subset of samples. Results for PFOS were qualified as estimated (J+) with potential high bias and assigned a reason code of LCH in Table 3.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2025. "Final Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Rev 1, Former Loring Air Force Base, Limestone, Maine; March 2025.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USDoD, 2021. "Department of Defense (DoD) Department of Energy (DoE) Consolidated Quality Systems Manual for Environmental Laboratories"; Version 5.4; DoD Environmental Data Quality Workgroup and DoE Consolidated Audit Program Data Quality Workgroup; 2021.

UsDoD, 2022. "Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-24"; Environmental Data Quality Workgroup; October 2022.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

USEPA, 2024. Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-R-24-001. January 2024.

Data Validation: Talia Sultan

T. Sultan

July 16, 2025

Reviewed by: Tige Cunningham NRCC-EAC

July 18, 2025

Table 1 – Summary of Samples and Analytical Methods
Data Validation Report
Loring PFAS Remedial Investigation
2025 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

						Method Class	PFAS
						Analysis Method	E1633
						Fraction	T
SDG	**Location**	**Field Sample ID**	**Lab Sample ID**	**Sample Date**	**Media**	**QC Code**	ParamCount
FC25227	LORNG-LST-WELLA	LORNG_LSTWELLA_06052025	FC25227-1	6/5/2025	WP	N	40
	LORNG-LST-WELLB	LORNG_LSTWELLB_06052025	FC25227-2	6/5/2025	WP	N	40
	RES09	LORNG_RES09_05292025	FC25227-3	5/29/2025	WP	N	40
	RES38A	LORNG_RES38A_05292025	FC25227-4	5/29/2025	WP	N	40
	RES39	LORNG_RES39_05292025	FC25227-5	5/29/2025	WP	N	40
		LORNG_RES39_05292025FD	FC25227-6	5/29/2025	WP	FD	40
	RES41	LORNG_RES41_06052025	FC25227-7	6/5/2025	WP	N	40
	USFW01	LORNG_USFW01_06052025	FC25227-8	6/5/2025	WP	N	40

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

WP = Potable Water

ParamCount = Number of target analytes reported

Prepared by:AKN
Date:6/24/25
Checked by: TSS
Date: 6/25/2025

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2025 Residential Well Program
Former Loring Air Force Base, Limestone, Maine

			SDG	FC25227													
			Location	LORNG-LST-WELLA		LORNG-LST-WELLB		RES09		RES38A		RES39				RES41		USFW01	
			Sample Date	6/5/2025		6/5/2025		5/29/2025		5/29/2025		5/29/2025				6/5/2025		6/5/2025	
			Sample ID	LORNG_LSTWELLA_06052025		LORNG_LSTWELLB_06052025		LORNG_RES09_05292025		LORNG_RES38A_05292025		LORNG_RES39_05292025		LORNG_RES39_05292025FD		LORNG_RES41_06052025		LORNG_USFW01_06052025	
			QC Code	N		N		N		N		N		FD		N		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
PFAS	T	Perfluorobutanoic acid (PFBA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		Perfluoropentanoic acid (PFPeA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	0.91	J
		Perfluorohexanoic acid (PFHxA)	NG/L	1.9	U	1.9	U	0.8	J	1.9	U	1.8	U	0.66	J	1.9	U	1.8	J
		Perfluoroheptanoic acid (PFHpA)	NG/L	1.9	U	1.9	U	0.54	J	1.9	U	1.8	U	1.9	U	1.9	U	0.81	J
		Perfluorooctanoic acid (PFOA)	NG/L	0.93	U	0.93	U	1.3	J	0.93	U	0.91	U	0.93	U	0.93	U	2.3	J
		Perfluorononanoic acid (PFNA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorodecanoic acid (PFDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluoroundecanoic acid (PFUnA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorododecanoic acid (PFDoA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorotridecanoic acid (PFTrDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorotetradecanoic acid (PFTeDA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorobutanesulfonic acid (PFBS)	NG/L	1.9	U	1.9	U	0.72	J	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluoropentanesulfonic acid (PFPeS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		Perfluorohexanesulfonic acid (PFHxS)	NG/L	1.9	U	1.9	U	4.2		1.9	U	1.8	U	1	J	1.9	U	9.7	
		Perfluoroheptanesulfonic acid (PFHpS)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorooctanesulfonic acid (PFOS)	NG/L	1.9	U	1.9	U	8.7	J+	1.9	U	2.9	J+	2	J+	1.9	U	17.9	J+
		Perfluorononanesulfonic acid (PFNS)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorodecanesulfonic acid (PFDS)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluorododecanesulfonic acid (PFDoS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	NG/L	7.5	U	7.4	U	7.3	U	7.4	U	7.3	U	7.4	U	7.4	U	7.3	U
		1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	NG/L	7.5	U	7.4	U	7.3	U	7.4	U	7.3	U	7.4	U	7.4	U	7.3	U
		1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	NG/L	7.5	U	7.4	U	7.3	U	7.4	U	7.3	U	7.4	U	7.4	U	7.3	U
		Perfluorooctane sulfonamide (PFOSA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		N-methyl perfluorooctanesulfonamide (NMeFOSA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	18	U
		N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	18	U
		Hexafluoropropylene oxide dimer acid (HFPO-DA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		Perfluoro-3-methoxypropanoic acid (PFMPA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		Perfluoro-4-methoxybutanoic acid (PFMBA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NG/L	3.7	U	3.7	U	3.7	U	3.7	U	3.6	U	3.7	U	3.7	U	3.6	U
		Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NG/L	1.9	U	1.9	U	1.8	U	1.9	U	1.8	U	1.9	U	1.9	U	1.8	U
		3-Perfluoropropyl propanoic acid (3:3FTCA)	NG/L	9.3	U	9.3	U	9.2	U	9.3	U	9.1	U	9.3	U	9.3	U	9.1	U
		2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	18	U
		3-Perfluoroheptyl propanoic acid (7:3FTCA)	NG/L	19	U	19	U	18	U	19	U	18	U	19	U	19	U	18	U

Prepared by: AKN
Date: 7/15/25
Checked by: TSS
Date:7/15/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2025 Residential Well Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
FC25227	E1633	T	FC25227-3	LORNG_RES09_05292025	Perfluorooctanesulfonic acid (PFOS)	8.7	=	8.7	J+	LCH	NG/L
			FC25227-5	LORNG_RES39_05292025	Perfluorooctanesulfonic acid (PFOS)	2.9	J	2.9	J+	LCH	NG/L
			FC25227-6	LORNG_RES39_05292025FD	Perfluorooctanesulfonic acid (PFOS)	2	J	2	J+	LCH	NG/L
			FC25227-8	LORNG_USFW01_06052025	Perfluorooctanesulfonic acid (PFOS)	17.9	=	17.9	J+	LCH	NG/L

Prepared by:AKN
Date:7/15/25
Checked by: TSS
Date: 7/15/2025

Table 4 - Summary of Field Duplicate Results
Data Validation Report
Loring PFAS Remedial Investigation
2025 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Sample ID	Duplicate ID	Method Class	Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	RPD[1]	Flag
FC25227	LORNG_RES39_05292025	LORNG_RES39_05292025FD	PFAS	Perfluorobutanoic acid (PFBA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoropentanoic acid (PFPeA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorohexanoic acid (PFHxA) (NG/L)	1.8	U	0.66	J	NC	
				Perfluoroheptanoic acid (PFHpA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanoic acid (PFOA) (NG/L)	0.91	U	0.93	U	NC	
				Perfluorononanoic acid (PFNA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorodecanoic acid (PFDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoroundecanoic acid (PFUnA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorododecanoic acid (PFDoA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotridecanoic acid (PFTrDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorotetradecanoic acid (PFTeDA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorobutanesulfonic acid (PFBS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoropentanesulfonic acid (PFPeS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluorohexanesulfonic acid (PFHxS) (NG/L)	1.8	U	1	J	NC	
				Perfluoroheptanesulfonic acid (PFHpS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorooctanesulfonic acid (PFOS) (NG/L)	2.9	J	2	J	NC	
				Perfluorononanesulfonic acid (PFNS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorodecanesulfonic acid (PFDS) (NG/L)	1.8	U	1.9	U	NC	
				Perfluorododecanesulfonic acid (PFDoS) (NG/L)	3.6	U	3.7	U	NC	
				1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS) (NG/L)	7.3	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS) (NG/L)	7.3	U	7.4	U	NC	
				1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS) (NG/L)	7.3	U	7.4	U	NC	
				Perfluorooctane sulfonamide (PFOSA) (NG/L)	1.8	U	1.9	U	NC	
				N-methyl perfluorooctanesulfonamide (NMeFOSA) (NG/L)	3.6	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamide (NEtFOSA) (NG/L)	3.6	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) (NG/L)	3.6	U	3.7	U	NC	
				N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE) (NG/L)	18	U	19	U	NC	
				N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE) (NG/L)	18	U	19	U	NC	
				Hexafluoropropylene oxide dimer acid (HFPO-DA) (NG/L)	1.8	U	1.9	U	NC	
				4,8-dioxa-3H-perfluorononanoic acid (ADONA) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoro-3-methoxypropanoic acid (PFMPA) (NG/L)	1.8	U	1.9	U	NC	
				Perfluoro-4-methoxybutanoic acid (PFMBA) (NG/L)	3.6	U	3.7	U	NC	
				Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (NG/L)	3.6	U	3.7	U	NC	
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS) (NG/L)	3.6	U	3.7	U	NC	
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (NG/L)	3.6	U	3.7	U	NC	
				Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (NG/L)	1.8	U	1.9	U	NC	
				3-Perfluoropropyl propanoic acid (3:3FTCA) (NG/L)	9.1	U	9.3	U	NC	
				2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA) (NG/L)	18	U	19	U	NC	
				3-Perfluoroheptyl propanoic acid (7:3FTCA) (NG/L)	18	U	19	U	NC	

Prepared by: AKN 6/24/25
Checked by: TSS 6/25/2025

Table 5 - Acronyms and Abbreviations

Data Validation Report
Loring PFAS Remedial Investigation
2025 Residential Sampling Program
Former Loring Air Force Base, Limestone, Maine

Acronym or Abbreviation	Definition
%	Percent
CCV	Continuing Calibration Verification
COC	Chain of Custody
DL	Detection Limit
DoD	Department of Defense
DoE	Department of Energy
EIS	Extracted Internal Standard
ICV	Initial Calibration Verification
ID	Identification
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantification
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NIS	Non-extracted Internal Standard
PFAS	Per- and Polyfluoroalkyl Substances
QC	Quality Control
QPP	Quality Program Plan
QSM	Quality Systems Manual for Environmental Laboratories
RL	Reporting Limit
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SGS	SGS North America Laboratory
USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
WSP	WSP USA Environment & Infrastructure, Inc.

Data Validation Report
Loring PFAS Remedial Investigation
Fall 2024 Soil Boring Sampling Program
Former Loring Air Force Base, Limestone, Maine

1.0 INTRODUCTION

Soil samples were collected at the Former Loring Air Force Base in Limestone, Maine, in September and October 2024 as part of the Remedial Investigation Per- and Polyfluoroalkyl Substances (PFAS) Response. Samples were submitted to Katahdin Analytical Services (Katahdin) located in Scarborough, Maine for analysis of Total Organic Carbon (TOC) and Grain Size analysis and reported in Sample Delivery Group (SDG) SR5475.

Sample event information included in this data validation report is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Data Validation Actions
- Table 5 – Acronyms and Abbreviations

Data quality reviews were completed as described in the Draft Quality Program Plan (QPP) Remedial Investigation PFAS Response (WSP, 2024). Data validation levels are established based on current United States Environmental Protection Agency (USEPA) guidelines for staged validation of analytical data (USEPA, 2009) and DoD General Validation Guidelines (USDoD, 2019). The TOC data were validated using Stage 2A procedures. A Stage 1 review was completed on the grain size data. Validation checklists and qualification justification documentation are stored in the WSP project file.

The Stage 1 review included a review of sample results forms, chain of custody and supporting records, and laboratory receipt checklist.

The Stage 2A data validation included a review of sample results forms, chain of custody (COC) and supporting records, laboratory receipt checklists, analytical holding time compliance, sample related quality control (QC) data forms (method blanks, laboratory control samples [LCS], matrix spike/matrix spike duplicates [MS/MSD], field and laboratory duplicates, and QC sample frequency checks.

Data review and qualification actions were completed based on DoD General Validation Guidelines (USDoD, 2019) and general procedures described in USEAP National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). QC limits presented in the QPP were used during the data evaluation. Data qualifications were completed, if necessary, in accordance with the USEPA guidelines and the professional judgment of the validator using the following qualifiers:

J = Analyte present; concentration is estimated
J+ = Analyte present; concentration is estimated with potential high bias
U = Analyte not detected at the associated detection limits

Results for non-detects are reported as U qualified results at the reported limit of detection (LOD) as defined by the laboratory. Analytes detected at concentrations between the detection limit (DL) and limit of quantitation (LOQ) are reported by the laboratory as J qualified estimated values.

Validation reason codes were applied to results associated with QC measurements outside project QC goals where validation qualifiers were added to results. Final results are presented in Table 2. The validation qualification actions and associated validation reason codes applied to sample results are summarized in Table 3. The following data validation reason codes were applied to one or more sample results:

MSH = Matrix spike recovery greater than the upper control limit
MBG = Material (Method) blank contamination exceeds the reporting limit

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

With the exception of the items discussed below, QC parameters and measurements checked during validation met requirements in the QPP, and/or analytical method. Unless specified below, results are interpreted to be usable as reported by the laboratory.

2.1 TOC

Data were evaluated based on the following parameters:

* Lab Report Narrative
* Data Completeness and COC Review
* Sample Collection and Preservation
* Holding Times
  QC Blanks
* LCS
  MS/MSD
* Lab Duplicates
* Field Duplicates
* Reporting Limits
* Electronic Data Verification

* QC criteria were met for this parameter.

2.1.1 QC Blanks

TOC was detected in the laboratory method blank at 480 ug/g for batch WG360633. The majority of associated samples had TOC concentrations greater than 5X the level reported in the blank. The following samples had TOC concentrations within the 2x – 5X range and were qualified as estimated J+:

sample ID	Lab ID	Conc ug/g	Validation qual	reason code
LORNG_SB01055_13-15_10012024_K	SR5475-2	1300	J+	MBG
LORNG_SB05041_10-12_10012024_K	SR5475-4	1900	J+	MBG
LORNG_SB07036_13-15_09302024_K	SR5475-6	1700	J+	MBG

2.1.2 MS/MSD

A matrix spike and matrix spike duplicate analysis was performed on LORNG_SB12025_0-2_10012024_K and compared to recover limits of 75-125%. The percent recovery in the MS (149%) and MSD (144%) was above the upper control limit and TOC was qualified as estimated (J+) in sample LORNG_SB12025_0-2_10012024_K and LORNG_SB12025_0-2_10012024FD_K.

Reference:

WSP Environment & Infrastructure, Inc. (WSP), 2024. "Draft Quality Program Plan – Addendum Remedial Investigation Per- and Polyfluoroalkyl Substances Response"; Draft Rev 1, Former Loring Air Force Base, Limestone, Maine; April 2024.

USDoD, 2019. DoD General Data Validation Guidelines. Environmental Data Quality Workgroup; November 2019.

USEPA, 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA, 2020. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review"; Office of Superfund Remediation and Technology Innovation (OSRTI); EPA-540-R-20-005; November 2020.

Data Validation: Tige Cunningham



February 28, 2025

Reviewed by: Greg Lull



March 26, 2025

Table 1
Chemist Review Summary Report
Loring PFAS RI
Former Loring Air Force Base, Maine
2024 Soil Sampling Program

						Method Class	WetChem		
						Analysis Method	D422 (Grain Size)	A2540G	LYDKHN (TOC)
						Fraction	T	T	T
SDG	Location	Field Sample ID	Lab Sample ID	Sample Date	Media	QC Code	ParamCount	ParamCount	ParamCount
SR5475	SB01055	LORNG_SB01055_0-2_10012024_K	SR5475-1	10/1/2024	SO	N	8	1	1
		LORNG_SB01055_13-15_10012024_K	SR5475-2	10/1/2024	SO	N	8	1	1
	SB05041	LORNG_SB05041_0-2_10012024_K	SR5475-3	10/1/2024	SO	N	8	1	1
		LORNG_SB05041_10-12_10012024_K	SR5475-4	10/1/2024	SO	N	8	1	1
	SB07036	LORNG_SB07036_0-2_09302024_K	SR5475-5	9/30/2024	SO	N	8	1	1
		LORNG_SB07036_13-15_09302024_K	SR5475-6	9/30/2024	SO	N	8	1	1
	SB12025	LORNG_SB12025_0-2_10012024_K	SR5475-7	10/1/2024	SO	N	8	1	1
		LORNG_SB12025_0-2_10012024FD_K	SR5475-8	10/1/2024	SO	FD		1	1
		LORNG_SB12025_13-15_10012024_K	SR5475-10	10/1/2024	SO	N	8	1	1

Notes:

N = Normal Field Sample, FD = Field Duplicate, AB = Ambient Blank, EB = Equipment Blank, MS = Matrix Spike, SD = Matrix Spike Duplicate, LR = Lab Replicate

SO = Soil

ParamCount = Number of target analytes reported

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Prepared by:AKN
Date:2/27/25
Checked by:TLC
Date:2/28/25

Table 2 – Summary of Analytical Results
Data Validation Report
Loring PFAS Remedial Investigation
2024 Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

			SDG	SR5475																
			Location	SB01055		SB05041		SB07036		SB12025										
			Sample Date	10/1/2024		10/1/2024		9/30/2024		10/1/2024										
			Sample ID	LORNG_SB01055_02_10012024_K		LORNG_SB01055_13-15_10012024_K		LORNG_SB05041_02_10012024_K		LORNG_SB05041_10-12_10012024_K		LORNG_SB07036_02_09302024_K		LORNG_SB07036_13-15_09302024_K		LORNG_SB12025_02_10012024_K		LORNG_SB12025_02_10012024FD_K		LORNG_SB12025_13-15_10012024_K	
			QC Code	N		N		N		N		N		N		N		FD		N	
Class	**Fraction**	**Analyte Name**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
WetChem	T	SOLIDS, PERCENT	PERCENT	84		87		86		89		86		91		94		94		88	
		SIEVE NO. 10, PERCENT PASSING	PERCENT	65		65		62		67		60		69		55				60	
		SIEVE, NO. 100, PERCENT PASSING	PERCENT	30		40		33		31		26		43		13				39	
		SIEVE, NO. 20, PERCENT PASSING	PERCENT	50		57		51		56		46		60		37				53	
		SIEVE NO. 200, PERCENT PASSING	PERCENT	27		36		30		27		23		39		11				36	
		SIEVE NO. 4, PERCENT PASSING	PERCENT	81		74		74		80		78		82		74				70	
		SIEVE NO. 40, PERCENT PASSING	PERCENT	40		50		43		45		36		53		21				47	
		SIEVE, NO. 60, PERCENT PASSING	PERCENT	34		46		38		37		31		48		16				43	
		SIEVE NO. 80, PERCENT PASSING	PERCENT	31		42		35		33		28		44		14				40	
		TOTAL ORGANIC CARBON	UG/G	17000		1300	J+	19000		1900	J+	14000		1700	J+	8700	J+	8300	J+	4500	

Prepared by: AKN
Date: 3/3/25
Checked by:TLC
Date:3/3/2025

Table 3 – Summary of Data Validation Actions
Data Validation Report
Loring PFAS Remedial Investigation
2024 Soil Sampling Program
Former Loring Air Force Base, Limestone, Maine

SDG	Method	Fraction	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
SR5475	LYDKHN	T	SR5475-2	LORNG_SB01055_13-15_10012024_K	TOTAL ORGANIC CARBON	1300		1300	J+	MBG	UG/G
			SR5475-4	LORNG_SB05041_10-12_10012024_K	TOTAL ORGANIC CARBON	1900		1900	J+	MBG	UG/G
			SR5475-6	LORNG_SB07036_13-15_09302024_K	TOTAL ORGANIC CARBON	1700		1700	J+	MBG	UG/G
			SR5475-7	LORNG_SB12025_0-2_10012024_K	TOTAL ORGANIC CARBON	8700		8700	J+	MSH	UG/G
			SR5475-8	LORNG_SB12025_0-2_10012024FD_K	TOTAL ORGANIC CARBON	8300		8300	J+	MSH	UG/G

Prepared by:AKN
Date:2/26/25
Checked by:TLC
Date:3/3/2025