STORMWATER MANAGEMENT PLAN

FOR
TOWN OF SCARBOROUGH

TOWN OF SCARBOROUGH, MAINE

General Information for the MS4 Operator

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Operator Title:	Town Manager
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1 INTRODUCTION

1.1 Overview of Regulatory Program

The Town of Scarborough (Town) is subject to the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s), which was issued by the Maine Department of Environmental Protection (DEP) with an effective date of July 1, 2022. Because the Permit is a Clean Water Act Permit, it is limited to a duration of five (5) years and is due to expire on June 30, 2027. However, if the Maine DEP does not issue another Permit by June 30, 2027, the Permit will be administratively continued and the Town may need to update this Stormwater Management Plan to show what activities it will complete during the continued time period.

Communities are regulated under this program when and if they are identified as having "Urbanized Areas" within their municipal boundary. An Urbanized Area is a U.S. Census-defined term, applied to a large area (50,000 people or more) that has a high population density and/or a high percentage of impervious cover (hard scape surfaces like parking lots or buildings). Both of these criteria (high population density and high percentage of impervious cover) cause an area to be at risk for adverse surface water quality impacts from polluted stormwater discharges.

The U.S. Environmental Protection Agency (USEPA) and Maine DEP began regulating communities for their stormwater discharges using the Urbanized Area criteria in 2003. The Town of Scarborough became regulated in 2003 based on the 2000 Census.

Once a community becomes regulated by the MS4 General Permit, only the Urbanized Area portions of the town are regulated. As each U.S. Census is published, if the Urbanized Area changes (based on changes to the population or impervious cover), additional areas will be added to the regulated area only after a new MS4 General Permit is issued. Once an Urbanized Area is regulated by the MS4 General Permit, it cannot be removed from regulation even if a subsequent Census identifies it is no longer classified as an Urbanized Area. The area regulated by the MS4 General Permit can either grow larger or stay the same size, but it cannot become smaller. Appendix A shows the Urbanized Area that is regulated by the 2022 MS4 General Permit for the Town, which is based on the cumulative 2000 and 2010 U.S. Census Urbanized Area data. The 2022 MS4 General Permit specifically does not include any areas identified by the 2020 U.S. Census.

1.2 Cooperation Between Regulated Communities

There are 30 municipalities in the State of Maine that are subject to the 2022 MS4 General Permit. There are also two transportation agencies that are subject to their own MS4 General Permit and eight state/federal agencies (called "nested" MS4s) that are subject to a third MS4 General Permit. The regulated MS4s (municipal, transportation, and state/federal) have a good history of cooperating on a state-wide basis to complete activities required by the General Permit, such as public outreach and training as a cost saving measure and to improve the quality of compliance.

The Town of Scarborough is a member of the Interlocal Stormwater Working Group (ISWG), pronounced *izzy-wig.* ISWG is a coalition of 14 MS4 municipalities in the greater Portland and Saco areas (Biddeford,

Cape Elizabeth, Cumberland, Falmouth, Freeport, Gorham, Old Orchard Beach, Portland, Saco, Scarborough, South Portland, Westbrook, Windham, and Yarmouth), as well as Southern Maine Community College and University of Southern Maine, which are nested MS4s. This coalition is facilitated by the Cumberland County Soil and Water Conservation District, which also assists with some of the permit requirements under contract to the ISWG.

Similarly, the Bangor area MS4s formed the Bangor Area Stormwater Working Group (BASWG), the Lewiston-Auburn area MS4s formed the Androscoggin Valley Stormwater Working Group (AVSWG), and the southern-most regulated MS4s formed the Southern Maine Stormwater Working Group (SMSWG). For some public education requirements, the stormwater working groups work cooperatively as identified in this plan.

In implementing the 2022 MS4 General Permit, the Town of Scarborough relies on the ISWG to complete some requirements and implements all other requirements using municipal staff. This plan describes which elements will be completed individually, regionally, or as a state-wide effort.

1.3 Stormwater Management Plan

Though the MS4 General Permit is a Clean Water Act Permit, it does not specify numeric effluent limitations (concentrations that a stormwater discharge must meet). Instead, the MS4 General Permit specifies narrative effluent limitations in the form of Minimum Control Measures (MCMs).

Each of the four MS4 General Permits (effective 2003, 2008, 2013, and 2022) require that the regulated MS4s develop and implement a Stormwater Management Plan (SWMP or Plan) to coincide with the effective dates of the General Permit.

This SWMP describes how the Town will implement Best Management Practices (BMPs) to meet the six MCMs set forth in Part IV(C) of the 2022 MS4 General Permit. The six MCMs that are addressed in this Plan are:

1. Education/Outreach Program
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE) Program
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management in New Development and Redevelopment
6. Pollution Prevention/Good Housekeeping for Municipal Operations

The 2022 MS4 General Permit requires that for each MCM, the Town must: define appropriate BMPs; designate a person(s) responsible for implementing each BMP; define a date or timeline with milestones for implementation of each BMP; and define measurable goals for each BMP.

The prior MS4 General Permits also required that the SWMP address these six MCMs, but the specific requirements related to each MCM have changed with each permit. In many instances, the BMPs in this Plan expand upon or continue BMPs that were developed under prior General Permits.

In addition to addressing the six MCMs, the Town must address several impaired waters requirements. Sections 1.4 and 1.5 describe the water quality status in the Town and what watersheds are considered to be priorities. Sections 1.6 through 1.9 describe how permit coverage is obtained, how the SWMP is modified (when needed), when public notice is required, and annual reporting requirements.

The Maine DEP will review this SWMP and determine if the Town is controlling pollutants to the "Maximum Extent Practicable" (MEP). The term "Maximum Extent Practicable" is defined in the Clean Water Act and means available and feasible considering cost, existing technology, and logistics based on the overall purpose of the project. Effectively, the Town is allowed to consider these concepts as they select Best Management Practices (BMPs) to meet permit requirements, but Maine DEP decides if the Town is meeting the "Maximum Extent Practicable" standard.

The SWMP is not an enforceable document and so some flexibility is built in to the BMPs to allow the Town to engage in an adaptive management approach to mitigating or eliminating the discharge of pollutants to and from its regulated small MS4. This flexibility allows the Town to adjust BMPs throughout the permit cycle if needed based on evaluations of their effectiveness, changing conditions, specific local concerns, or changes in other factors. Some SWMP Modifications require DEP review and approval and public notice. Sections 1.6 Obtaining Coverage to Discharge, and Section 1.8 SWMP Modifications describe the requirements associated with modifying a SWMP.

1.4 Water Quality and Discharges to Impaired Waters

The 2022 MS4 General Permit contains the following requirements for discharges to waters that are not meeting their fishable and swimmable standards (i.e., impaired waters):

1. If the waterbody to which a point source discharge drains is impaired and has an EPA-approved total maximum daily load (TMDL), then the SWMP must address compliance with the TMDL waste load allocation (WLA) and any implementation plan. The GP does not authorize a direct discharge that is inconsistent with the WLA of an approved TMDL. This requirement applies only to TMDLs that were approved by EPA as of 10/15/2020.
2. If a TMDL is approved or modified by EPA after 10/15/2020, the DEP will notify the permittee if any changes are needed to the SWMP and may take other actions regarding the approved TMDL as identified in the 2022 MS4 General Permit.
3. If an MS4 has a discharge to an Urban Impaired Stream, it must develop and implement three (3) BMPs to address the impairment(s), unless the DEP has determined the MS4 discharge is not causing or contributing to the impairment(s).

The Fact Sheet that was issued with the 2022 MS4 General Permit also contained a strongly worded recommendation for MS4s to consult with the Maine DEP Division of Environmental Assessment regarding impaired waters that do not have approved TMDLs. The consult would be focused on identifying the root cause of the impairment(s) and developing a strategy to reduce the discharge of pollutants of concern if the permittee is causing or contributing to the impairment.

Section 1.4.1 describes generally how the State evaluates surface waters and describes TMDL documents and Urban Impaired Streams. Section 1.4.2 describes the status of the waters that receive discharges from

the Town's MS4. Section 1.4.3 describes recent progress by the Town to address any impairments that have MS4 requirements and provides rationale for how the BMPs in this SWMP address these 2022 MS4 General Permit requirements.

1.4.1 State Water Quality Assessments

The State of Maine is required by the Clean Water Act to identify water quality classifications for each surface water in the State and then to assess whether each of those waters is meeting its designated classification standards. Maine has four classifications for freshwater rivers, three classes for marine and estuarine waters, and one class for lakes and ponds. Each classification identifies a use and set of water quality standards for the water. The classifications, uses, and standards are described and assigned to the various waters in the Maine Statutes (Title 38, Sections 464 - 469).

Assessments as to whether each water meets its designated classification are based on data that is obtained from a number of sources depending on the type of water being assessed:

- Lake and ponds are assessed primarily through data obtained by the DEP and regional entities and lake associations. The regional and lake association data is coordinated through the Lake Stewards of Maine (Volunteer Lake Monitoring Program).
- Marine and estuarine waters are assessed by evaluation of data obtained from the DEP, Maine Healthy Beaches, Department of Marine Resources, Marine Environment's Gulf Watch, Gulf of Maine Council, and several other academic and non-profit organizations.
- Wetlands are assessed primarily using data obtained from the DEP Biomonitoring Program.
- Rivers and streams are assessed using data from the DEP Biomonitoring Program, Surface Water Ambient Toxics (SWAT) Monitoring Program, the Atlantic Salmon Recovery Plan, Volunteer River Monitoring Program (VRMP), and through many other government agencies such as the Department of Inland Fisheries and Wildlife, EPA, United States Geologic Survey.

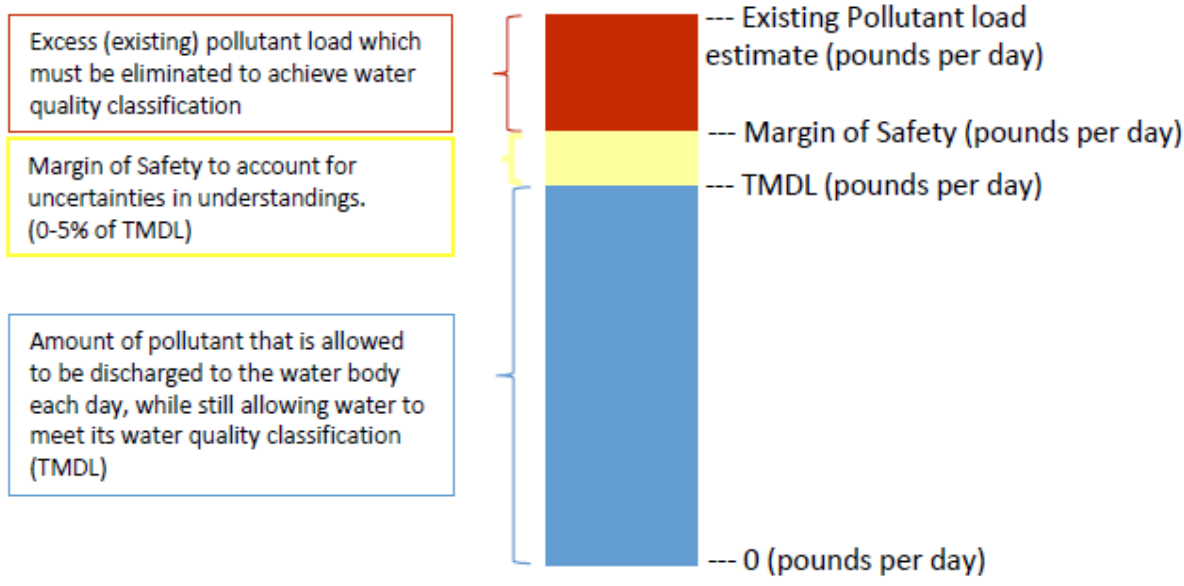
Every two years, the DEP publishes a report and list documenting the results of the assessments and identifying which waters are meeting their designated classifications and which are considered impaired. The report and list are called the Integrated Water Quality Report and are generally referred to by the Section of the Clean Water Act which requires them: the 305(b) report and/or the 303(d) list, respectively. There are five general status categories available for assignment to each water:

- Category 1: Attaining all designated uses and water quality standards, and no use is threatened.
- Category 2: Attains some of the designated uses; no use is threatened; and insufficient data or no data and information is available to determine if the remaining uses are attained or threatened (with presumption that all uses are attained).
- Category 3: Insufficient data and information to determine if designated uses are attained (with presumption that one or more uses may be impaired).
- Category 4: Impaired or threatened for one or more designated uses, but does not require development of a Total Maximum Daily Load (TMDL) report.
    - 4A means a TMDL has already been completed
    - 4B means other pollution control measures will address impairment
    - 4C means the impairment is not caused by a pollutant

- Category 5: Waters impaired or threatened for one or more designated uses by a pollutant(s), and a TMDL report is required.

In Maine, 2016 303(d) list is the most recent version of the list that is approved by the EPA. The Maine DEP has indicated they will issue a combined 2018/2020/2022 303(d) list sometime in spring 2022.

A TMDL document identifies the source(s) of the impairment and recommendations to correct the impairments. In particular, a TMDL document identifies how much of a pollutant a water body can receive and still meet its water quality classification. Typically, the units are identified as pounds per day, which is the basis for the term "Total Maximum Daily Load." TMDLs typically include a Margin of Safety between 2% and 5% of the TMDL to account for uncertainties or lack of knowledge about the relationship between the pollutant loading and water quality.



Total Maximum Daily Load (TMDL) Components

In addition to the Maine 305(b) report and 303(d) list, Maine has developed a special rule, Chapter 502, which has restrictions related to direct watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams. This rule became effective in 1997 and has been modified several times over the years. The rule defines an Urban Impaired Stream as a stream that fails to meet its water quality standards because of effects of stormwater runoff from developed land. The rule imposes additional stormwater treatment controls on development in the watersheds of Urban Impaired Streams.

1.4.2 Scarborough Water Quality Status

The following is a summary of the waters in the Town's Urbanized Area that receive point source discharges from the Town's MS4 and each waterbody's TMDL and impairment status. Table 1 shows the waters where

the Town has MS4 discharges and their impairment status. The Table shows the number of MS4 outfalls (in parentheses) that discharge to each waterbody as of December 2020.

Figure 1 shows the locations of the fresh waters and their status according to the 2016 303(d) list (from https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=dffb3d2b85904b18978d02fc9d913b5f). Appendix B includes Red Brook and Phillips Brook Assessment Summaries from the 2012 Impervious Cover TMDL. Figure 2 shows the locations of the marine/estuarine waters and their status according to the Maine Department of Marine Resources (DMR) 2021 Shellfish Growing Area Closure Notices (from https://www.maine.gov/dmr/shellfish-sanitation-management/maps/index.html). Detailed maps of the marine/ estuarine waters are included in Appendix B.

The following documents were reviewed in making these determinations:

- Statewide Bacteria TMDL (September 2009)
- Chapter 502 Direct Watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams
- Impervious Cover TMDL (September 2012)
- Red Brook Watershed Management Plan (June 2011)
- Phillips Brook Watershed Management Plan (February 2018)
- Final 2016 Maine Integrated Water Quality Report and Appendices (Maine 303(d) list)
- Maine Department of Marine Resources Growing Area Closure Notices (March 2021)

Table 1 – Status of waterbodies receiving MS4 discharges – Scarborough, ME						
Waters with MS4 Discharges (# outfalls)	**Maine DEP Classification and Numeric Designation**	**DMR Growing Area**	**Completed TMDLs (EPA approval date)**	**Urban Impaired Streams (Ch. 502)**	**Non-TMDL Listing in 2016 303(d) List**	**Watershed Management Plan / Other Water Quality Document**
Spurwink River Estuary (21)	Class SA/SB 811-4	WH.P1 (DMR Pollution Area 12)	None	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Shellfishing Prohibited Area (upper Spurwink River)
Red Brook (20)	Class C ME0106000 105_610R07	--	IC-TMDL (2012)	Yes	None (Cat. 4-A for approval of IC-TMDL & Cat. 5-D for PCBs)	Red Brook Watershed Management Plan (2011) and CFUP
Scarborough River (51)	Class SB/SA 811-2	WG.CA3 (DMR Pollution Area 11)	Bacteria TMDL (2009; 2013 Addendum)	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Conditionally Approved (upper Scarborough River)
Libby River (29)	Class SB/SA 811-2	WG.CA3 (DMR Pollution Area 11)	Bacteria TMDL (2009; 2013 Addendum)	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Shellfishing Approved
Nonesuch River (54)	Class SB/SA 811-2	WG.CA2 (DMR Pollution Area 11)	Bacteria TMDL (2009; 2013 Addendum)	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Conditionally Approved (upper Nonesuch River)
Jones (Doc's) Creek (13)	Class SB/SA 811-2	WG.CA4 (DMR Pollution Area 11)	Bacteria TMDL (2009; 2013 Addendum)	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Conditionally Approved (upper Jones Creek)
Saco Bay (1)	Class SB/SA 811-2	WG.P2 (DMR Pollution Area 11)	Bacteria TMDL (2009; 2013 Addendum)	None	Cat. 5-B-1 Bacteria Only	2021 DMR Growing Area Closure Notices: Prohibited

Mill Brook (38)	Class SA Unknown	--	None	None	Cat. 5-B-1 Bacteria Only	2020 DEP NPS Priority Watershed - Threatened
Willowdale Brook (19)	Class C Unknown	--	None	None	None	
Stuart Brook (3)	Class B Unknown	--	None	None	None	
Phillips Brook (23)	Class C ME0106000 104_611R02	--	IC-TMDL (2012)	Yes	None (Cat. 4-A for approval of IC-TMDL & 5-A for DO)	Phillips Brook Watershed Management Plan (2018)
Stroudwater River (4)	Class B ME0106000 105_610R04	--	None	None	None (Cat. 3 for insufficient data)	

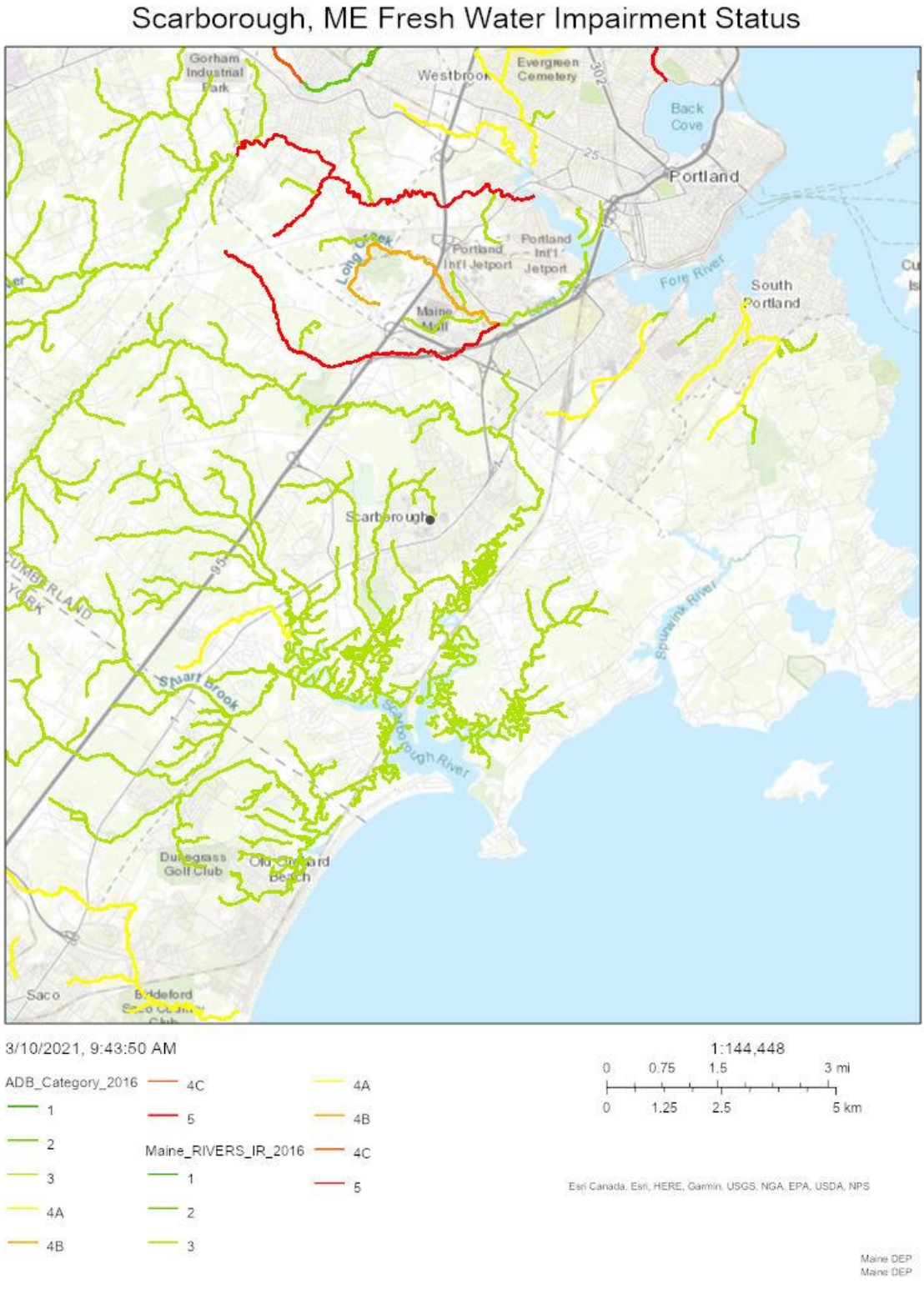


Figure 1 Scarborough, Maine fresh water impairment status from 2016 303(d) list

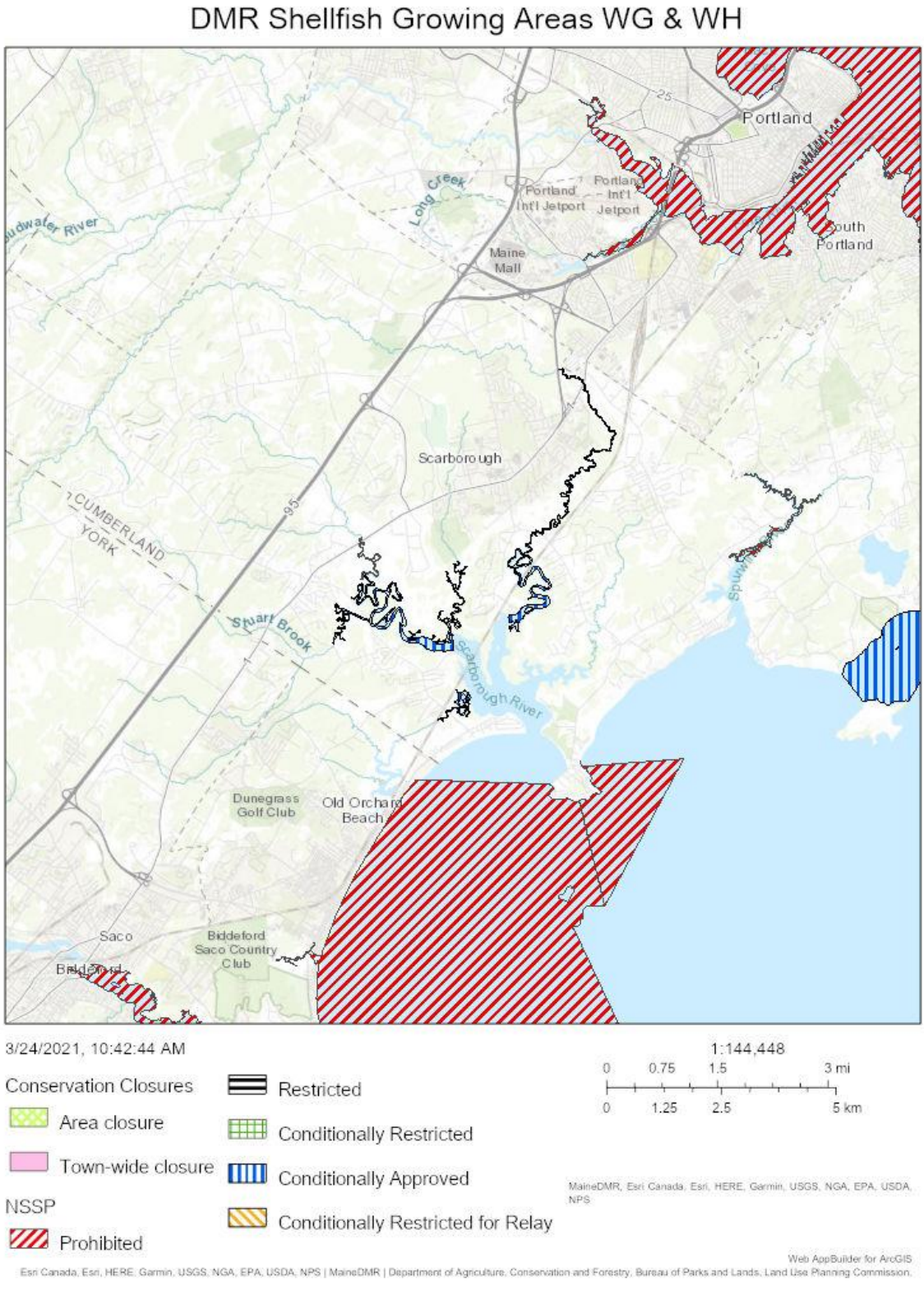


Figure 2 DMR Shellfish Areas WG & WH from 2021 Growing Area Closure Notices

Scarborough River and Spurwink River Bacteria TMDL: Both the Scarborough River and the Spurwink River are listed in the Statewide Bacteria TMDL document as impaired for shellfishing because of elevated bacteria concentrations. The Shellfish Growing Areas are identified by the Department of Marine Resources (DMR) as WG and WH. The TMDL document does not specifically identify the source of the bacteria but encourages communities to pursue an action plan that is based on investigation of the source. All of the Scarborough River and Spurwink River in Scarborough is estuarine and so is considered impaired for bacteria.

The Statewide Bacteria TMDL document requires that all sources of bacteria that are prohibited (such as failed septic systems or illicit discharges) be removed. It also requires that any sources of bacteria from allowed discharges (such as this MS4 permitting program) be restricted to concentrations equal to the water quality criteria.

The limits for Class B (fresh) water, Class SB (estuarine), and the National Shellfish Sanitation Program standards are shown in the following table:

Basis for Bacteria Standard	**Geometric Mean for any 90-day interval between April 15 and October 31 may not exceed:**	**No more than 10% of the samples in any 90-day interval between April 15 and October 31 may exceed:**
Maine DEP Class B (Freshwater)	64 CFR/100 ml E-coli	236 CFU/100 ml E-coli
Maine Class SB (Estuarine/Marine)	8 CFU/100 ml enterococcus	54 CFU/100 ml enterococcus
National Shellfish Sanitation Program	14 CFU/100 ml fecal coliform	31 CFU/100 ml fecal coliform

1.4.3 Progress on addressing Impairments and approach to BMP development

Section 1.4.3 describes how impaired waters are addressed in this SWMP and provides some background on work the Town has done in recent years to improve water quality in these waters.

1.4.3.1 Discharges to Waters with TMDLs

An impervious cover (IC) TMDL (no. DEPL-1239) was completed by the Maine DEP in September 2012 and includes Red Brook and Phillips Brook watersheds in the Town of Scarborough. The TDML recommended actions to reduce the stormwater impacts associated with impervious surfaces to an estimated level that is supportive of the intended uses (e.g. recreation, habitat) and meets water quality standards for Red Brook and Phillips Brook. The TDML recommended following targets to address impervious cover impacts:

- Red Brook Watershed: current (2012) impervious cover = 11%
  - Recommended Target = 8% impervious cover
- Phillips Brook Watershed: current (2012) impervious cover = 9%
  - Recommended Target = 6% impervious cover

The Urban Impaired Stream (UIS) Assessment Summaries and Strategies for Red Brook and Phillips Brook from the IC-TMDL are provided in Appendix B. The UIS Strategies build upon the Town's past efforts under the 2008 and 2013 General Permits, as well as the June 2011 Red Brook Watershed Management Plan and the 2018 Phillips Brook Watershed Management Plan.

Because Red Brook and Phillips Brook are both designated as UIS, the 2022 MS4 General Permit requires the Town to implement three (3) BMPs to address the waters' impairment, and no additional actions need to be taken to address the TMDL for these waters.

1.4.3.2 Discharges to Urban Impaired Streams

This section describes the historical activities that have been undertaken and the current status of proposed and planned projects, which support the selection of three (3) BMPs for each watershed and their Measurable Goals as described in Section 2.7 of this SWMP.

As Urban Impaired Streams, Red Brook and Phillips Brook have received much attention over the past decade in order to attempt to correct the Brooks' impairments. The Town of Scarborough has completed several projects in both watersheds aimed at water quality improvement. The following is a brief timeline showing studies and projects that have been completed within each watershed.

Red Brook

- 1994: Maine DEP completed a fish survey of in Red Brook.
- 2002: Maine DEP conducted a stream habitat assessment of Red Brook.
- 2010: Maine DEP completed a benthic-macro-invertebrate assessment of Red Brook.
- 2011: The Town of Scarborough and the Cumberland County Soil and Water Conservation District completed the Red Brook Watershed Management Plan. The City of South Portland, Maine DEP, Casco Bay Estuary Partnership, MaineDOT, the Maine Turnpike Authority (MTA), and local residents and stakeholders were active participants of the planning process.

  The Red Brook Watershed Management Plan identified three primary action areas to improve the Brook's water quality to Class C standards: upgrading stream crossings, reducing erosion, and restoring in-stream habitat; building stewardship throughout the watershed; and monitoring BMPs, hydrology, and PCB levels.
- 2014: The Town established a Compensation Fee Utilization Fund Plan (CFUP) to hold funds to correct impairments created by development in the watershed (as allowed by Maine DEP Chapter 500).
- 2015 - 2017: The Red Brook Restoration Project, Phase I (DEP 319 funded project #2015RT05) was completed. This project included replacing a high priority undersized culvert on a private road, removing an abandoned culvert, and retrofitting a stormwater detention pond on a private commercial property. All three of these construction projects were identified in the Red Brook Watershed Management Plan. In addition, the Town completed outreach to commercial businesses in the watershed to encourage them to adopt best practices for good housekeeping and pollution prevention.
- 2011 - present: MaineDOT and MTA upgraded a significant number of culverts identified in the

Red Brook Watershed Management Plan. In addition, the Town completed culvert inlet and outlet upgrades at the existing New Road culvert and worked with neighboring South Portland on stormwater retrofit projects including a water quality soil filter at the intersection of Cummings and Payne Roads and a center island water quality filter BMP at the same intersection. These projects were added to a roadway reconstruction project and funded by the Town of Scarborough.

Phillips Brook

- 2002: Maine DEP conducted a stream habitat assessment of Phillips Brook.
- 2010: Maine DEP completed a benthic-macro-invertebrate assessment of Phillips Brook.
- 2018: The Town and Cumberland County Soil and Water Conservation District completed the Phillips Brook Watershed Management Plan. Maine DEP, MaineDOT, MTA, and local residents and stakeholders were active participants of the planning process.

  The Phillips Brook Watershed Management Plan identifies structural retrofits, in-stream restoration, and culvert improvements; community outreach about stream-friendly lawn and landscaping practices, riparian buffer management, and salt-reducing winter maintenance practices; and updating ordinances and policies to protect the stream corridor as methods for restoring the Brook's water quality to Class C standards.

  The Maine Department of Inland Fisheries and Wildlife (IF&W) completed a fish survey of Phillips Brook. Using electrofishing, IF&W identified brook trout, American eel, and white sucker in the Brook.
- 2019: The Phillips Brook Restoration Project, Phase I (DEP 319 funded project #20190007) was initiated. The primary focus of this project is to address one high priority stream restoration site at the Scarborough Public Works laydown yard on Payne Road. This project is scheduled to be complete in December 2021.

1.4.3.3 Discharges to impaired waters that do not have TMDLs

As required by the Fact Sheet to the 2022 MS4 General Permit, the Town consulted with the Maine DEP to assess what actions must be taken to address discharges to waters that do not have TMDLs but are impaired. Table 1 showed that several marine/estuarine waters fall into this category because of bacteria impairments that affect shellfishing. These waters are located in the DMR Shellfish Growing Areas WG and WH.

These waters were originally listed in the Statewide Bacteria TMDL, but in 2016, the DEP moved the estuarine/marine waters to the 303(d) non-TMDL category until such time as they can update the Bacteria TMDL to provide more specific spatial data on which areas are included. Therefore the 2022 MS4 General Permit requirements do not apply to these 303(d) non-TMDL waters, but the Statewide Bacteria TMDL does provide some guidance on how impairments in these areas should be handled by MS4s.

The Statewide Bacteria TMDL document does not specifically identify the sources of the bacteria impairments but encourages communities to pursue an action plan that is based on investigation of the source. MS4s are already required to conduct investigations of potential illicit discharges under MCM 3 IDDE Program.

The Statewide Bacteria TMDL document also requires that all sources of bacteria that are prohibited (such as failed septic systems or illicit discharges) be removed. It also requires that any sources of bacteria from allowed discharges (such as this MS4 permitting program) be restricted to concentrations equal to the water quality criteria. MS4s are already required to complete these activities under MCM 3.

In considering MCM 3 requirements, consultation with the Maine DEP on these non-TMDL waters revealed:

1. The DEP has not fully specified the root cause of the impairment, but suspects that stormwater is a contributing factor.
2. That implementation of the IDDE elements of the MS4 General Permit (conducting outfall inspections, sampling outfalls during dry weather flow, and completing IDDE investigations to eliminate any bacterial sources), are sufficient to address the impairment until such time as the Bacteria TMDL document can be updated.

Section 2.7 of this SWMP also contains three (3) BMPs designed to improve Red Brook water quality and three separate BMPs designed to improve Phillips Brook, in accordance with the TMDL waste Load Allocation.

1.5 Priority Watersheds

Previous MS4 General Permits required that regulated MS4s identify a Priority Watershed and apply BMPs to that Watershed. The 2022 MS4 General Permit does not contain any specific requirements related to Priority Watersheds. However, it does require that an MS4 have a procedure in place to prioritize watersheds when addressing illicit discharges. The Town of Scarborough uses this prioritization to identify where illicit discharge inspections are conducted first. The Town may also use the prioritization for illicit discharge investigations in the event there were insufficient resources to address all potential illicit discharges simultaneously. The IDDE Plan describes in more detail how the prioritization is applied.

The Maine DEP maintains a list of waters that are vulnerable to non-point source pollution, which is then available to receive grant funding under Sections 604(b) and 319 of the Clean Water Act, as long as the funding is not used to satisfy the conditions of a Clean Water Act Permit (such as the 2022 MS4 General Permit). The list includes the MS4's "Priority Watershed."

The Town of Scarborough may not use 319 or other federal grant funds to implement any BMPs required by the MS4 General Permit.

During the previous permit cycle, the Town's two highest priority watersheds were Red Brook and Phillips Brook.

1.6 Obtaining Coverage to Discharge

As required, a Notice of Intent (NOI) to comply with the 2022 MS4 General Permit was submitted to the Maine DEP with this SWMP. A copy of the Town's NOI is provided in Appendix C1.

30-day Public Notice was provided by both Maine DEP and the Town to allow the public to comment on

the SWMP. A copy of the Public Notice provided by the Town is contained in Appendix C1.

Following review of the SWMP and NOI and receipt of public comments, Maine DEP issues a permittee specific DEP Order, establishing terms and conditions that are enforceable in addition to the language in the 2022 MS4 General Permit, which is also enforceable.

The permittee specific DEP Order is also subject to a 30-day public comment period, but only the DEP provides this public notice. DEP provides any updated information to the Town at the end of the public comment permit.

If no comments are received, DEP provides notice to the Town that they are authorized to discharge under the 2022 MS4 General Permit and the permittee specific DEP Order.

Once DEP issues authorization to discharge, the Town has 60 days to update the SWMP to reflect any new or changed requirements based on the DEP Order and any comments. At that time, the permittee specific DEP Order will be included in Appendix C1. In addition, the permittee will include all comments received in Appendix C2 along with any notes on how the comments were addressed in the SWMP. The SWMP needs to be resubmitted to the DEP after revision along with a narrative indicating how the SWMP has been modified to be consistent with the 2022 MS4 General Permit and permittee specific DEP Order unless the Department indicates in writing that resubmittal is not required. The new permit conditions do not take effect until 7/1/2022.

1.7 SWMP Availability

The SWMP must be made available to the public by publishing on the Town Website (scarboroughmaine.org). A copy must also be made available to the public at Town Hall.

If any of the following entities request a copy, one must be made immediately available to them:

- USEPA or Maine DEP;
- Any interconnected or adjacent MS4;
- Any owner or operator of a water supply company where the MS4 discharges to a water supply watershed, or;
- Members of the public.

1.8 SWMP Modifications During the Permit Cycle

During the permit term (2022 to 2027), the SWMP must be kept current. As required by the 2022 MS4 General Permit, the Town will amend the SWMP if DEP or the Town determine that:

a) The actions required by the BMPs fail to control pollutants to meet the terms and conditions of the 2022 MS4 General Permit and the permittee specific DEP Order;

b) The BMPs do not prevent the potential for a significant contribution of pollutants to waters of the State other than groundwater;

c) New information results in a shift in the SWMP's priorities.

Even though this SWMP is not an enforceable document, if any changes are made, the SWMP will be made available for 30-day public comment by posting the changes on the Town's website.

If the changes being made are not explicitly required by the 2022 MS4 General Permit or the permittee specific DEP Order, the opportunity for public comment will be made on the Town's website annually and the DEP will be notified of the changes in the annual report following the permit year the changes were made.

If the changes being made are explicitly required by the 2022 MS4 General Permit or the permittee specific DEP order, one of the following processes will be followed depending on who identified the need for the change:

- If the changes are initiated by the Town, the Maine DEP will be notified prior to changing any elements by filing a permit application with the DEP that includes a justification to formally modify the requirement;
- If the changes are initiated by the Maine DEP, it will notify the Town, and the Town must respond in writing within 30 days of the notice explaining how it will modify the SWMP. The Town must then modify the SWMP within 90 calendar days of the Town's written response, or within 120 calendar days of the DEP notice (whichever is less). Any such modification must be submitted to the DEP for final review.

1.9 Annual Compliance Report and Record Keeping

By September 15 of each year, the Town will electronically submit an Annual Compliance Report for the Maine DEP's review using a standardized form provided by the Maine DEP. The Annual Compliance Report must be sent to:

Rhonda.poirier@maine.gov
Municipal/Industrial Stormwater Coordinator
Department of Environmental Protection
17 State House Station Augusta,
Maine 04333-0017

The Annual Compliance Report must include the following:

a. The status of compliance with the terms and conditions of the 2022 MS4 General Permit and the Town's permittee specific DEP Order, based on the implementation of the Town's Plan for each permit year, an assessment of the effectiveness of the components of its stormwater management program, an assessment of the appropriateness of identified BMPs, progress towards achieving identified measurable goals for each of the MCMs; and progress toward achieving the goal of reducing the discharge of pollutants to the MEP.

b. Summary of information collected and analyzed, including monitoring data, if any, during the reporting period.

c. A summary of the stormwater activities the Town intends to undertake pursuant to its Plan to comply with the terms and conditions of the 2022 MS4 General Permit and the Town's permittee specific DEP Order during the next reporting cycle.

d. A change in any identified BMPs or measurable goals that apply to the Plan.

e. A description of the activities, progress, and accomplishments for each of the MCMs 1-6, including such items as the status of education and outreach efforts, public involvement activities, stormwater mapping efforts, the number of visual dry weather inspections performed, the number of inaccessible and new outfalls, dry weather flow sampling events and laboratory results, detected illicit discharges, detected illicit connections, illicit discharges that were eliminated, construction site inspections, number and nature of enforcement actions, post construction BMP status and inspections, the number of functioning post construction BMPs, the number of post construction sites requiring maintenance or remedial action, the status of the permittee's good housekeeping/pollution prevention program including the percentage of catch basins cleaned, those catch basins cleaned multiple times and the number of catch basins that could not be evaluated for structural condition in a safe manner. Where applicable, the MS4 must quantify steps/measures/activities taken to comply with the 2022 MS4 General Permit and its Plan, including reporting on the types of trainings presented, the number of municipal and contract staff that received training, the length of the training and training content delivered, as well as any revisions to the Stormwater Pollution Prevention Plan (SWPPP) procedures and/or changes in municipal operations.

The Maine DEP will review the annual reports and provide comments to the MS4s. Changes to the report based on the Maine DEP's review comment(s) must be submitted to the Department within 60 days of the receipt of the comment(s).

The regulated MS4s must keep records required by the 2022 MS4 General Permit and permittee specific DEP Order for at least three (3) years following its expiration or longer if requested by the Maine DEP Commissioner. The regulated MS4s must make records, including this Plan, available to the public at reasonable times during regular business hours.

2 MINIMUM CONTROL MEASURES

2.1 MCM 1 Education/Outreach Program

The 2022 MS4 General Permit requires municipalities to develop and implement two (2) Education/Outreach Campaigns to address stormwater issues of significance:

1. An Outreach to Raise Awareness Campaign targeted at two (2) audiences applying three (3) tools per audience per year. One target audience must be the public and the second audience may be selected from: municipal, commercial, development/construction, or institutions.
2. An Outreach to Change Behavior Campaign to promote one behavior change directed at two (2) audiences using a minimum of three (3) outreach tools per year. This campaign will promote and reinforce desirable behaviors designed to reduce stormwater pollution.

The ISWG municipalities implement their education/outreach requirements on a regional basis. In 2018, the ISWG executed a statewide survey to assess public awareness of a variety of stormwater issues and related behaviors. The survey results report[1] was included in the ISWG Permit Year 5 (2017-2018) annual reports. In addition, the ISWG municipalities reviewed regional water quality related to stormwater issues, examined the unique conditions within each of their communities, and evaluated the needs for public education around stormwater at five (5) of their regional meetings (9/13/2018, 3/21/2019, 7/18/2019, 3/26/2020, 5/21/2020). Based on the survey results and the discussions at their regional meetings, the ISWG municipalities agreed on the issues of significance to address and the tools and messages that might be effective. Each of the BMPs below provides a brief introductory section describing the rationale for the selection of the BMP. The BMPs are further structured to allow for adaptive education and outreach approaches to create a strong, diverse, and effective campaign over the duration of this permit.

The Town will fulfill the requirements for Public Education/Outreach through participation in the ISWG and the Town's provision of funding to the Cumberland County Soil and Water Conservation District (CCSWCD) for Public Education/Outreach services, as described in the following BMPs. The BMPs will be implemented according to their individual timelines over the term of the permit.

2.1.1 BMP 1.1 – Outreach to Raise Awareness Campaign

Responsible Party – Town Engineer (with implementation assistance from CCSWCD)

The 2022 MS4 General Permit requires the permittee to raise awareness of the public as well as one of the following groups: municipal, commercial, development/construction, or institutions. This BMP describes the reasoning and measurable goals for the public audience and the selected second audience: development/construction.

Background for Measurable Goal 1.1a Public Audience: The Think Blue Maine campaign began in 2003 as a statewide effort to raise awareness of common stormwater pollutants and ways to prevent those pollutants. The Think Blue Maine campaign has been historically successful in increasing awareness of stormwater issues. The ISWG, AVSWG, SMSWG coordinate their Think Blue Maine messaging and

[1] http://thinkbluemaine.cumberlandswcd.com/wp-content/uploads/2018/07/Survey_Summary-FINAL.pdf

education efforts to provide consistent messaging in Southern Maine. In addition, the Massachusetts and New Hampshire small MS4s are using similar Think Blue campaigns, resulting in regionally consistent messaging.

In 2018, the ISWG participated in a statewide survey to measure public awareness of stormwater issues and better understand behaviors that impact stormwater. Ninety-four percent (94%) of survey respondents in the ISWG region ages 25 to 34 stated it was "very important to have clean water in the lakes and streams in [their] community," and 86% of ISWG respondents ages 25 to 34 believe that stormwater runoff has a major impact or somewhat impacts water quality, but only 46% of ISWG respondents ages 25 to 34 were able to correctly describe what happens to stormwater at their residence. Because this age group has not been targeted for education under previous permit cycles and has the potential to impact stormwater for many years into the future, the ISWG, AVSWG, and SMSWG communities will cooperatively use the Think Blue Maine campaign to raise awareness of the target audience to be more aware of stormwater issues and be more willing to change their behavior in the future.

Measurable Goal 1.1a – The Town, through its participation in the ISWG, will raise 15%[2] of the target audience's awareness of what happens to stormwater at their residence or place of work. According to the 2019 data from the US Census Bureau, the ISWG region's population for ages 25 to 34 is approximately 38,000 people: therefore 15% of the target audience is approximately 6,000 people.

Target Audience: People 25 to 34 in the ISWG region

Overarching Message: "Water that lands on our roads, roofs, and other hard surfaces picks up pollutants and carries them to our local waterbodies without being treated." This message will be presented with variations based on target audience interests and outreach tools used.

Outreach Tools: A minimum of three (3) outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience's receptiveness to the method. Any tool used in a given year will be tailored to the message for the relevant target audience subset based on common characteristics and/or demographics.

Evaluation: Effectiveness will be evaluated annually by tracking process indicators[3] for each tool implemented that year and by tracking impact indicators[4] where available (see Appendix D).

Implementation schedule: A minimum of three of the tools from Appendix D will be implemented each year for the duration of the permit.

Background for Measurable Goal 1.1b Development/Construction Audience: Evaluation of municipal stormwater programs through annual meetings with municipal staff and officials has revealed a large amount of effort required to comply with MCM 4 tasks. The ISWG communities identified opportunities to address common MCM 4 goals through coordinated regional and statewide stormwater education to developers and contractors to reduce development and construction-related stormwater pollutants that are not already required by MCM 4. Due to the cyclical nature of the development/construction sector, a baseline evaluation will be conducted in Permit Year 1 to establish contractor and developer awareness

[2] As recommended in the EPA's "Getting in Step: A guide for conducting watershed outreach campaigns" (2003), when 15 to 20 percent of an audience adopts a new idea or behavior, it will be able to permeate to the rest of the audience.

[3] Indicators related to the execution of the outreach program.

[4] Indicators related to the achievement of the goals or objectives of the program.

and the baseline target audience.

Measurable Goal 1.1b – The Town, through its participation in the ISWG, will raise awareness of developers and contractors in the ISWG area. The ISWG will aim to increase awareness by 15% over the permit year 1 baseline. Awareness messages will focus on construction-related stormwater pollutants and methods available to reduce discharge of those pollutants.

Target Audience: Developers and contractors who are located within the ISWG region.

Overarching Message: "Through proper design and site management, erosion and sediment control best management practices can reduce the potential to negatively impact local water bodies." This message will be presented with variations based on target audience interests and outreach tools used.

Outreach Tools: A minimum of three (3) outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience's receptiveness to the method. Any tool used in a given year will be tailored to the message for the relevant target audience subset based on common characteristics and/or demographics.

Evaluation: Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be measured by the number of DEP certified contractors located in the ISWG region over the course of the permit term.

Implementation schedule: A minimum of three (3) of the tools will be implemented each year for the duration of the permit.

2.1.2 BMP 1.2 – Outreach to Change Behavior Campaign

Responsible Party – Town Engineer (with implementation assistance from CCSWCD)

In the previous three permit cycles, the ISWG communities focused on changing behavior to reduce the impact of nutrients from lawn care practices on waterbodies. The ISWG communities will continue their efforts to reduce sources of nutrients by promoting proper dog waste disposal to two (2) target audiences this permit term for the following reasons:

1. Generally, excess nutrients in our waters are a nationally recognized water quality issue related to stormwater. There are multiple common sources of nutrients, including sediment, pet waste, septic systems, and fertilizer.
2. The statewide survey conducted in Permit Year 5 of the previous permit cycle indicated that survey respondents are aware that nutrient sources (including dog waste) are a common stormwater pollutant, and respondents expressed a willingness to act to help reduce stormwater pollution. Eighty-four (84%) percent of 2018 survey respondents in the ISWG region ages 25 to 34 and 67% of 2018 survey respondents in the ISWG region ages 35 to 55 selected "picking up pet waste and putting it in the trash" as a practice they believed could reduce water pollution.
3. Most ISWG communities are part of the Casco Bay watershed. In the June 2019 Casco Bay Nutrient Council report, nutrients were identified as the main pollutant of concern for the health of Casco Bay. While there is discrepancy between nutrient models as to the contribution percentages of the three main sources of nutrients (stormwater, wastewater, and atmospheric deposition),

stormwater runoff is believed to contribute between 24% and 64% of the nitrogen entering Casco Bay.

4. Some ISWG communities have encountered problems with dog waste not being picked up[5] or not being properly disposed of in the trash, causing local water quality concerns[6] and unsanitary conditions for the public and municipal staff.
5. Most ISWG communities have taken steps to discourage improper dog waste disposal through ordinances. However, there are still barriers to effectively educating and enforcing these types of ordinances.
6. Dog owners ages 25 to 64 are the least likely to pick up after their dog[7]. However, dog owners in this age range receive their information through different methods[8]. In order to provide effective messaging on proper dog waste management, two audiences will be created to allow appropriate outreach tools to be used for each age group.

A baseline evaluation will be conducted in Permit Year 1 to establish dog owner behavior related to waste disposal and the baseline target audience within the ISWG region.

Measurable Goal 1.2a – The Town, through its participation in the ISWG, will work toward changing the behavior of pet owners. The ISWG will aim to change behavior by 15% over the permit year 1 baseline. Behavior change messages will focus on picking up and properly disposing of pet waste.

Target audience: Dog owners ages 25 to 34 within the ISWG region

Overarching Message: "Dispose of dog waste as a solid waste, so it does not end up in our stormwater. Once in stormwater, dog waste contributes nutrients, bacteria, and pathogens to our ponds, lakes, streams, rivers, and bays, which can lower property values, harm our drinking water, and hinder recreational and economic opportunities."

This message will be presented with variations based on target audience interests and outreach tools used.

Outreach Tools: A minimum of three (3) outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience's receptiveness to the method. Any tool used in a given year will be tailored to the message of the relevant target audience based on common characteristics and/or demographics.

Evaluation: Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be evaluated by conducting visual (observational) surveys of dog waste disposal at public areas and tracking the presence of dog waste bags in catch basins.

[5] https://www.pressherald.com/2019/03/21/south-portland-raises-a-red-flag-over-dog-waste-problem-at-hinckley-park/

[6] https://www.pressherald.com/2019/08/30/south-portland-park-tests-positive-for-algae-that-can-harm-dogs/

[7] Hall, S.L. (2006 June) Survey on Poop: Half don't scoop; neighborhoods seeking solutions. *The News & Observer,* pp. B1.

[8] https://umaine.edu/undiscoveredmaine/small-business/resources/marketing-for-small-business/social-media-tools/social-media-statistics-details/

Implementation schedule: A minimum of three (3) of the tools will be implemented each year for the duration of the permit.

Measurable Goal 1.2b – The Town, through its participation in the ISWG, will work toward changing the behavior of pet owners. The ISWG will aim to change behavior by 15% over the permit year 1 baseline. Behavior change messages will focus on picking up and properly disposing of pet waste.

Target audience: Dog owners ages 35 to 55 within the ISWG region

Overarching Message: "Dispose of dog waste as a solid waste, so it does not end up in our stormwater. Once in stormwater, dog waste contributes nutrients, bacteria, and pathogens to our ponds, lakes, streams, rivers, and bays, which can lower property values, harm our drinking water, and hinder recreational and economic opportunities."

This message will be presented with variations based on target audience interests and outreach tools used.

Outreach Tools: A minimum of three (3) outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience's receptiveness to the method. Any tool used in a given year will be tailored to the message for the relevant target audience based on common characteristics and/or demographics.

Evaluation: Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be evaluated by conducting visual (observational) surveys of dog waste disposal at public areas and tracking the presence of dog waste bags in catch basins.

Implementation schedule: A minimum of three (3) of the tools will be implemented each year for the duration of the permit.

2.1.3 BMP 1.3 – Effectiveness Evaluation

Responsible Party – Town Engineer (with implementation assistance from CCSWCD)

Measurable Goal 1.3a – The Town, through its participation in ISWG, will submit an annual report each year of the 2022 MS4 General Permit term that documents the implementation of each BMP. The annual report will include the message for each audience, the methods of distribution, the outreach tools used, the measures/methods used to determine on-going effectiveness of the campaigns, and any changes planned based on the measures of effectiveness.

Measurable Goal 1.3b – In Permit Year 5 of the 2022 MS4 General Permit the Town, through its participation in ISWG, will conduct an evaluation of the overall effectiveness of the Awareness and Behavior Change BMPs (BMPs 1.1 and 1.2). The evaluation will be a review of the annually reported benchmark values for the Awareness and Behavior Change BMPs as well as documentation of overall changes during the permit term. The evaluation will identify recommendations for future awareness and behavior change target audiences, messages, tools, and benchmarks. A comprehensive survey will be conducted for the ISWG region to evaluate the impact of the awareness campaigns.

2.1.4 BMP 1.4 – Additional Activities

Responsible Party – Town Engineer (with implementation assistance from CCSWCD)

This BMP describes activities that are not required by the 2022 MS4 General Permit but are conducted by the Town to supplement the education/outreach program.

Measurable Goal 1.4a – As funding allows, the Town will support the CCSWCD's youth education curriculum to community schools. Annual reports will include the total number of students reached, which schools were involved, and the lesson topics covered.

2.2 MCM 2 Public Involvement and Participation

The Town will fulfill the requirements for Public Involvement and Participation through participation in the ISWG and the Town's provisions of funding to CCSWCD for Public Involvement and Participation services, or through directly fulfilling the requirements, as described in this section of the Plan.

2.2.1 BMP 2.1 – Public Notice Requirement

Responsible Party – Town Engineer (with implementation assistance from CCSWCD)

Measurable Goal 2.1a – The Town will follow applicable state and local public notice requirements for the Stormwater Management Plan and NOI to comply with the MS4 General Permit. The NOI and this Plan will be made available on the Town's website. The Town will document public meetings related to their stormwater program and attendance at those meetings in their annual report.

Measurable Goal 2.1b – The ISWG members meet as a group six (6) times per year to implementation of the Stormwater Management Plans and MS4 General Permit. These meetings will be publicized through the CCSWCD website and on ISWG member websites and are open to the public.

2.2.2 BMP 2.2 – Public Event

Responsible Party – Town Engineer (with implementation assistance from Cumberland County Soil & Water Conservation District)

Measurable Goal 2.2a – The Town will annually host, conduct, and/or participate in a public community event with a pollution prevention and/or water quality theme from the list included in the 2022 MS4 General Permit or another activity approved by the DEP. Stormwater stewardship and educational messages and activities will be incorporated into the event. The event will be advertised on the Town's website, through the Town's and CCSWCD's social media accounts, and other Municipal and CCSWCD communication methods. The annual report will include a description of the event and the estimated attendance/participation.

2.3 MCM 3 Illicit Discharge Detection and Elimination

The Town will continue to implement its Illicit Discharge Detection and Elimination (IDDE) program, which includes:

- A Watershed-based map of the stormwater infrastructure;
- A written IDDE Plan which describes:
  - Inspections of the infrastructure during dry weather (and monitoring of outfall that flow during dry weather);
  - Investigations of potential illicit discharges;
  - Enforcement of the Non-Stormwater Discharge Ordinance;
  - A Quality Assurance Project Plan;
- Development of a list of outfalls that have the potential to cause illicit discharges during wet weather.

The following BMPs will be implemented to meet this Minimum Control Measure.

2.3.2 BMP 3.1 – Continue to Implement the Non-Stormwater Discharge Ordinance

Responsible Party - Public Works Director

Measurable Goal 3.1a – The Town implemented a Non-Stormwater Discharge Ordinance on September 5, 2007. The Ordinance was updated on August 5, 2014. The Public Works Director enforces this Ordinance with the assistance of the Code Enforcement Officer when needed. This Ordinance provides the Public Works Director with the authority to issue letters of warning, notices of violation, and/or fines. The Town will continue to enforce this Ordinance throughout the permit cycle.

Measurable Goal 3.1b – The Town will document the results of enforcement actions taken for illicit discharges on an Excel spreadsheet.

2.3.3 BMP 3.2 – Maintain the Written IDDE Plan

Responsible Party - Public Works Director

Measurable Goal 3.2a - The Town prepared a written IDDE Plan in 2015, which has been updated to contain the elements required in the 2022 MS4 General Permit (Part IV.C.3.b.i through vi). The updated IDDE Plan is provided in Appendix E of this SWMP. The IDDE Plan will be reviewed annually and updated if needed to reflect any changes to the program.

Measurable Goal 3.2b - The Town will conduct a wet weather assessment in accordance with the 2022 MS4 General Permit Part IV.C.3.f and will incorporate the wet weather assessment into their IDDE Plan by the end of Permit Year 5 (6/30/2027).

2.3.4 BMP 3.3 – Maintain Storm Sewer System Infrastructure Map

Responsible Party - Public Works Director

Measurable Goal 3.3a – The Town created a watershed-based map of the MS4 infrastructure during the first three permit cycles (2003-2022). The map shows the locations of stormwater catch basins, drain manholes, connecting surface and subsurface infrastructure showing the direction of pipe flow, and the locations of stormwater outfalls. The infrastructure is documented in a Geographic Information System (GIS), which contains unique identifiers for outfalls and catch basins, as well as outfall material, size, and receiving water. The map is updated annually as follows:

- The GIS geodatabase is updated to reflect changes to infrastructure based on inspections by Public Works staff on a continuous basis;
- The GIS geodatabase is updated when as-built drawings become available for municipal infrastructure, and;
- Maps are available for viewing through the Town's online GIS.

2.3.5 BMP 3.4 – Conduct Infrastructure Inspections and Monitor Flowing Outfalls

Responsible Party - Public Works Director

Measurable Goal 3.4a – The Town will conduct infrastructure inspections for pollutants using the following frequency:

- One dry weather inspection will be conducted on each outfall at least once per permit cycle as required by the 2022 MS4 General Permit.
- Dry weather ditch inspections will be conducted whenever ditch maintenance work is anticipated.
- Catch basins will be inspected for evidence of pollutants during their required sediment inspections (see BMP 6.4 for details).

Measurable Goal 3.4b – If an outfall is observed to be flowing during a dry weather inspection, the flow will be sampled and analyzed once per permit term using the methods described in the IDDE Plan (BMP 3.2; Appendix E) unless it is exempt from dry weather investigations (as described in Part IV.C.3.e.vi of the 2022 MS4 General Permit). Outfalls sampled during dry weather will be handled as follows:

1. Outfalls where sampling and analysis reveals the potential for an illicit discharge: The Town will investigate the catchment area associated with the outfall for potential illicit discharges as described under Measurable Goal 3.5a.
2. Outfalls where sampling and analysis does not reveal the potential for illicit discharge: The Town will document the dry weather flow as either uncontaminated groundwater, water from a natural resource, or allowable non-stormwater discharge.

The Town will summarize either the monitoring results and any investigation completed, or exempt status, as applicable, in an Excel spreadsheet or GIS geodatabase.

The Town's IDDE Plan (Appendix E) describes the information collected electronically during infrastructure inspections. The Town documents the inspections electronically in the GIS.

2.3.6 BMP 3.5 – Conduct Investigations on Suspected Illicit Discharges

Responsible Party - Public Works Director

Measurable Goal 3.5a – Whenever the Public Works Department becomes aware of a potential illicit discharge, it will investigate to identify the source using methods described in the written IDDE Plan (Appendix E). The Public Works Department will track the status and outcome of the investigations using an Excel spreadsheet or GIS geodatabase.

2.3.7 BMP 3.6 – Significant Contributors of Pollutants

Responsible Party - Public Works Director

Measurable Goal 3.6a - During the previous permit cycle the Maine DEP identified that hydrant flushing was a potential contributor of pollutants to MS4s. The DEP published an issue profile providing water districts and departments guidance on how to meet ambient water quality standards for chlorine during hydrant flushing. The document was specifically designed for discharges to MS4s. In addition, the Maine Rural Water Association and Maine Water Utilities Association prepared a guidance document and training to show departments and districts how to meet the requirements of the issue profile.

The Town previously made annual requests to the Portland Water District and Maine Water to provide annual reports describing their hydrant flushing dechlorination processes, and the Town will continue to request that they provide the reports each year.

Measurable Goal 3.6b – If any of the following allowed non-stormwater discharges (in addition to hydrant flushing) are identified as significant contributors of pollutants to the MS4, the Town will work with the responsible dischargers to control these sources so they are no longer significant contributors of pollutants.

- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- uncontaminated pumped ground water
- uncontaminated flows from foundation drains
- air conditioning and compressor condensate
- irrigation water
- flows from uncontaminated springs
- uncontaminated water from crawl space pumps
- uncontaminated flows from footing drains
- lawn watering runoff
- flows from riparian habitats and wetlands

- residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used), and
- firefighting activity runoff (hydrant flushing is addressed in MG 3.6a)
- water line flushing and discharges from potable water sources
- individual residential car washing
- dechlorinated swimming pool discharges

2.4 MCM 4 Construction Site Stormwater Runoff Control

The Town will update, implement, and enforce its Construction Runoff Control Program for construction activities that disturb greater than or equal to one acre of land, including projects less than one acre that are part of a larger common plan of development or sale as required by the 2022 MS4 General Permit through implementation of BMPs as described in this section.

To comply with the Site Plan Review Ordinance, Chapter 405B, Section V, all sites are required to submit an Erosion and Sediment Control Plan for the site. This section of the Town of Scarborough Ordinance is applicable to any building or structure that is erected or externally enlarged more than 100 square feet and any enlarged or changed: parking, loading, and vehicular or pedestrian use. Construction of or addition to single and two-family dwellings and their accessory building and areas of parking and vehicular or pedestrian use are exempt from this standard, along with Municipal buildings or uses, farm stands less than 400 square feet, temporary use of accessory storage containers, timber harvesting, accessory agriculture, commercial agriculture, or commercial husbandry.

Scarborough's ordinances can be found at scarboroughmaine.org/government/town-ordinances/. The following BMPs will be implemented to meet this Minimum Control Measure.

2.4.2 BMP 4.1 – Erosion Sediment Control Ordinance

Responsible Party - Town Engineer

Measurable Goal 4.1a – The Town's Site Plan Review Procedures (specified in the Town's Zoning Ordinance, Chapter 405B) already specify that any application for Site Plan Review contain an Erosion Control Plan. This requirement covers all sites that disturb one or more acres of land including projects less than one acre that are part of a larger common plan of development or sale, as required by the 2022 MS4 General Permit.

The Town will update the Site Plan Review Procedures by 7/1/2023 to reference that the Erosion Control Plan meet a set of standards consistent with the applicable sections of Attachment C to the 2022 MS4 General Permit (which are the same as the Maine DEP Stormwater Rule Chapter 500 Appendices A Erosion and Sediment Control, B Inspections and Maintenance, and C Housekeeping).

Measurable Goal 4.1b – Prior to the Zoning Ordinance update identified in Measurable Goal 4.1a, the Town will develop either on its own, or regionally, a set of standards consistent with the construction site requirements contained in Attachment C to the 2022 MS4 General Permit (which are the same as the Maine DEP Stormwater Rule Chapter 500 Appendices A Erosion and Sediment Control, B Inspections and

Maintenance, and C Housekeeping).

The standards will include a requirement to control waste, such as discarded building materials, concrete truck wash-outs, chemicals, litter and sanitary waste, at the construction site that may cause adverse impacts to water quality if passed through the storm drain system.

2.4.3 BMP 4.2 – Site Plan Review Procedures

Responsible Party – Town Planner and Town Engineer

Measurable Goal 4.2a – The Town's Site Plan Review Procedures, which contain the required elements listed in the 2022 MS4 General Permit (consideration of potential water quality impacts, erosion control, waste storage, the ability for the public to comment at publicly noticed meetings, and procedures to consider information submitted by the public), will continue to be implemented.

2.4.4 BMP 4.3 – Procedures for notifying construction site developers and operators

Responsible Party – Town Engineer

Measurable Goal 4.3a – The Town will continue to notify developers and contractors of requirements to obtain coverage under the Maine Construction General Permit (MCGP) and Chapter 500 for sites that disturb one or more acres of land using the following methods:

- In discussions with Developers during pre-application meetings and through the Planning Board review process.
- During compliance review at Pre-construction meeting.

2.4.5 BMP 4.4 – Conduct and Document Construction Site Inspections

Responsible Party – Town Engineer

Measurable Goal 4.4a – The Town will continue implementing its procedure for construction site inspections which will be formalized in a written document as part of the annual report to DEP. The written procedure will:

- Identify that third-party inspectors conduct these inspections;
- Identify that the third-party inspector will review any inspection deficiencies with the contractor during or at the conclusion of the inspection to allow for BMP repairs to be done no later than the next work day, additional BMPs to be added within seven (7) calendar days, and significant repairs to be completed within seven (7) and prior to any storm event (rainfall) and that:
    - The inspection reports are provided to the Town Engineer within four (4) business days of the inspection for any sites that require corrective measures, and within one week for any sites that do not require corrective measures;
- Require three inspections during active earth-moving phase of construction;
- Require a minimum of one inspection annually until the project reaches substantial completion;

- Require a final inspection at project completion to ensure that permanent stabilization has been achieved and all temporary erosion and sediment controls have been removed, and;
- Include use of the construction inspection form provided in Appendix F of this SWMP.

Measurable Goal 4.4b – The Town will document construction sites that trigger the ordinance using an Excel spreadsheet each year. The spreadsheet will contain the site's name, map and lot number, dates of inspections, and any enforcement actions and corrective actions taken.

2.5 MCM 5 Post-Construction Stormwater Management in New Development / Redevelopment

The Town will continue to implement its Post Construction Stormwater Management Program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Town's MS4 through implementation of the following BMPs.

The Town's current ordinances contain provisions to prevent or minimize water quality impacts from development in accordance with the requirements of the MS4 General Permit.

The following is a brief summary of the ordinance contents as they relate to the MCM 5 requirements:

Chapter 405B, Section IV.G Site Plan Review Ordinance requires that:

- Adequate provisions shall be made for the control, collection, and disposal of all stormwater runoff from the site. Drainage plans, details, and calculations shall be designed to complement the hydrology and natural features of the site and shall not cause adverse impacts to abutters, downstream properties, or receiving waters.
- When areas of the site are to be paved, they may be designed and constructed with pervious and semi-pervious alternatives to bituminous pavement, to minimize stormwater runoff and facilitate infiltration and natural hydrological functions to the extent feasible.
- Abrupt changes to natural drainage ways and grades shall be avoided. Natural drainage ways shall not be filled unless specifically permitted by the Planning Board and transitional grading shall be used to blend all earthworks into the natural contours of the site.
- The water quality of receiving waters shall not be degraded by the stormwater runoff from the site.

Chapter 405B, Section IV.V Site Plan Review Ordinance requires that:

- Before and during construction, the applicant or developer shall provide a plan for erosion and sediment control at the site, which abides by the following conservation, erosion, and sediment control measures as well as the site construction, safety, and hazardous waste standards:
    - Stripping of vegetation, regrading and other development shall be performed in such a way as to minimize erosion.
    - Development shall preserve prominent natural features, keep cut-fill operations to a minimum, and ensure conformity with topography so as to create the least erosion potential and adequately handle the volume and velocity of surface water

runoff.

- Wherever feasible, natural vegetation shall be retained, protected, and supplemented.
- The extent of disturbed area and the duration of exposure shall be proposed by the applicant for consideration by the Town.
- Disturbed soils shall be stabilized as efficiently as possible.
- Temporary vegetation or mulching shall be used to protect exposed critical areas during development.
- The permanent vegetation and mechanical erosion control measures shall be installed in conformance with a specified schedule as approved by the Town.
- Until the disturbed area is stabilized, sediment in the runoff shall be trapped and contained by the use of debris basins, sediment basins, silt traps, silt fencing, or other acceptable measures.
- Whenever sedimentation is caused by stripping vegetation, regrading, or other development, it shall be the responsibility of the developer causing the sedimentation to remove it from all adjoining surfaces, drainage systems and watercourses and to repair any resulting damages in an efficient manner.

Chapter 419 Post-Construction Stormwater Infrastructure Management Ordinance requires that:

- A Post Construction Stormwater Management Plan be prepared and implemented in accordance with Maine DEP guidance;
- A Maintenance Agreement for any infrastructure that will remain under private control be executed and recorded at the Registry of Deeds, and;
- An annual report documenting that all on-site BMPs have been inspected by a qualified inspector and are either functioning as intended or if they require maintenance and repair, a list of deficiencies, and documentation once they are corrected be submitted to the Town on or before June 1st of each year.

Scarborough's ordinances can be found at scarboroughmaine.org/government/town-ordinances/.

2.5.2 BMP 5.1 – Promote strategies to prevent or minimize water quality impacts

Responsible Party - Town Engineer

Measurable Goal 5.1a – The Town will rely on the Maine DEP Chapter 500 Stormwater Rules which provide stormwater treatment standards for sites that disturb one or more acres of land and are either: in the watershed of an Urban Impaired Stream or a lake most at risk that create 20,000 square feet of impervious cover, or in any other watershed that creates one acre or more of impervious cover or is in any watershed where five or more acres of land will be developed.

Measurable Goal 5.1b – The Town's current ordinances contain general provisions to prevent or minimize water quality impacts from development, which includes notifying developers that they must consider Low

Impact Development (LID) techniques in accordance with the requirements of the 2022 MS4 General Permit.

Currently all pre-application meetings with Town staff include discussions related to LID strategies with the goal of mitigating impacts of increased runoff and stormwater pollution by: 1) treating runoff as close to the source as possible, 2) preserving and restoring pre-development hydrological and ecological functions, 3) using site design strategies to minimize runoff and to protect natural drainage patterns, and 4) using structural practices that filter, detain, retain, and infiltrate. These meetings are set prior to a full design of the site so that the possibility to incorporate these techniques in the design are viable.

In addition, LID-related strategies are also incorporated into staff review comments once development applications are submitted to the Town for approval. These comments are reviewed by Scarborough's Planning Board for consideration in regards to modifying the site designs prior to formal approval.

The Town will continue to implement these practices and encourage LID strategies in all site development.

2.5.3 BMP 5.2 – Maintain Post Construction Ordinance or Similar Measure

Responsible Party - Town Engineer

Measurable Goal 5.2a – During the 2008-2013 permit cycle, the Town passed Chapter 419 of the Scarborough Zoning Ordinance, the Post Construction Stormwater Infrastructure Management Ordinance (effective September 2, 2009), which requires any site that disturbs one acre or more to certify to the Town annually by June 1 that they have inspected and maintained their stormwater BMPs. The Town will continue to track:

- The cumulative number of sites that have Post-Construction BMPs discharging into the Town's MS4;
- The number of sites that have post construction BMPs discharging into the Town's MS4 that were reported to the municipality;
- The number of sites with documented functioning post construction BMPs, and;
- The number of sites that required routine maintenance or remedial action to ensure that the post construction BMP is functioning as intended.

Measurable Goal 5.2b – By 7/1/2023, the Town's Post Construction Ordinance (Chapter 419) will be updated to state that for any sites reporting that maintenance is required:

- Deficiencies will be corrected within 60 days of identification and a record of the corrective action taken will be provided to the Town's Code Enforcement Officer within the same 60-day period.
- If it is not possible to correct the deficiency and notify the Town within 60 days, the property owner will coordinate with the Code Enforcement Office to establish an expeditious schedule to correct the deficiency and will provide a record of the corrective actions taken.

2.6 MCM 6 Pollution Prevention/Good Housekeeping for Municipal Operations

The objective of this MCM is to mitigate or eliminate pollutant runoff from municipal operations on property that is owned or managed by the permittee and located within the 2000-2010 Urbanized Area through implementation of the following BMPs.

2.6.2 BMP 6.1 – Operations at Municipally Owned Grounds and Facilities

Responsible Party – Public Works Director

Measurable Goal 6.1a – During the previous MS4 permit cycle, the Town developed an inventory of municipal operations conducted in, on, or associated with facilities, buildings, cemeteries, parks and open space owned or operated by the Town that have the potential to cause or contribute to stormwater pollution. The Town will review and update its inventory annually.

Measurable Goal 6.1b – During the previous MS4 permit cycle, the Town developed and implemented Operation and Maintenance (O&M) Procedures for the municipal operations listed in their inventory that had the potential to cause or contribute to stormwater pollution. The Town will continue to implement these O&M Procedures and will review and update the O&M Procedures annually to iteratively improve strategies and practices to eliminate or better control pollutant discharges.

2.6.3 BMP 6.2 – Training

Responsible Party – Public Works Director

Measurable Goal 6.2a – The Town will conduct annual training as follows:

a. Train Public Works and Community Services employees annually in the Stormwater Pollution Prevention Plan (SWPPP) and Grounds and Maintenance O&M Procedures.

b. Train Police and Fire employees annually in their respective O&M procedures.

2.6.4 BMP 6.3 – Continue Street Sweeping Program

Responsible Party – Public Works Director

Measurable Goal 6.3a - Each permit year the Town will continue to sweep all publicly accepted paved streets and publicly owned paved parking lots at least once per year as soon as possible after snowmelt.

2.6.5 BMP 6.4 – Cleaning of Catch Basins

Responsible Party – Public Works Director

Measurable Goal 6.4a – The Town will inspect its catch basins for sediment content at least once every two (2) years, but the Town will continue to attempt to inspect each catch basin annually if time and municipal budget allows and will clean catch basins that accumulate more than three (3) inches of sediment.

Measurable Goal 6.4b – The Town will track which catch basins accumulate excess sediment (i.e., more than 50% of the sump contains sediment) to ensure those basins are inspected again the following year and cleaned if necessary. If a catch basin exhibits less than 25% sediment in its sump for two (2) consecutive

years, it is removed from the excess sediment list, and can be inspected again every two (2) years.

Measurable Goal 6.4c – The Town will continue to beneficially re-use any catch basin grit that does not exhibit evidence of sewage, oil/grease, litter, or other pollutants in accordance with Maine DEP Solid Waste Management Rule 418 Beneficial Use of Solid Waste. Grit that exhibits evidence of pollutants will be profiled to assess its waste classification and disposed of at an appropriately licensed solid waste facility.

2.6.6 BMP 6.5 – Maintaining and Upgrading Stormwater Conveyances and Outfalls

Responsible Party – Public Works Director

Measurable Goal 6.5a – The Town will maintain and upgrade the stormwater conveyance systems based on the results of the catch basin, outfall, and ditch inspections, in accordance with the urgency of any needed repairs or maintenance. The Town continues to perform systematic capital upgrades of the storm drain system in correlation with the road paving program for the Town. The Town also inspects and maintains its proprietary stormwater treatment systems using a qualified third-party inspector.

2.6.7 BMP 6.6 – Stormwater Pollution Prevention Plans (SWPPP)

Responsible Party – Public Works Director

Measurable Goal 6.6a – During the previous MS4 permit cycle, the Town prepared a SWPPP for the Public Works Facility. The Town will amend the SWPPP to comply with the requirements specified in Part IV.C.6.d by 6/30/2022. In addition, the Town will amend the SWPPP within 30 calendar days of completion of any of the following:

- A change in design, construction, operation or maintenance that may have a significant effect on the discharge or potential for discharge of pollutants including the addition or reduction of industrial activity;
- Monitoring, inspections, or investigations by the Town, local, state or federal officials that determine the SWPPP is ineffective in eliminating or significantly minimizing the intended pollutants;
- A discharge occurs that is determined by the Maine DEP to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard.

Measurable Goal 6.6b - The Town will implement the SWPPP throughout each Permit Year including conducting quarterly facility inspections using the Town's own form (Appendix E) and visual monitoring using forms containing the inspection criteria identified in Appendix D of the 2022 MS4 General Permit.

2.7 Impaired Waters BMPs

The Town's regulated MS4 has discharges to Red Brook and Phillips Brook, which are classified as Urban Impaired Streams in Maine DEP Rule Chapter 502 and are listed in the 2012 Maine Statewide Impervious Cover Total Maximum Daily Load (TMDL). The 2022 MS4 General Permit requires the Town to implement three BMPs for each of these Urban Impaired Streams, and Maine DEP has stated that no additional actions need to be taken to address the TMDLs.

2.7.1 Red Brook

The Town of Scarborough and the Cumberland County Soil and Water Conservation District completed the Red Brook Watershed Management Plan in 2011. The City of South Portland, Maine DEP, Casco Bay Estuary Partnership, MaineDOT, the Maine Turnpike Authority (MTA), and local residents and stakeholders were active participants of the planning process. In 2014, the Town established a Compensation Utilization Fee Plan (CFUP) for Red Brook to hold funds to correct impairments created by development in the watershed. In 2015 the Town received funding through the Maine DEP 319 grant program to complete Phase 1 Implementation projects within the watershed. These projects included upgrading stream crossing, removing an abandoned culvert, improving the inlet and outlet at a significant stream crossing, and retrofitting an existing private commercial stormwater pond to include water quality treatment. In addition, since 2011 MaineDOT and MTA have upgraded a significant number of culverts identified in the Red Brook Watershed Management Plan. The Town also capitalized on opportunities to improve the water quality of the stream by collaborating with South Portland during the roadway reconstruction project of Cummings Road to include a center island water quality filter BMP and a water quality soil filter at the intersection of Cummings and Payne Roads, where Red Brook crosses this substantial intersection.

More details of the work completed to date are contained in Section 1.4 of this SWMP and set the framework for identification of the three BMPs that will be implemented to meet the Urban Impaired Stream requirement of the 2022 MS4 General Permit.

To meet the Urban Impaired Stream requirement of the 2022 MS4 General Permit, the Town will implement the following BMPs within the Red Brook Watershed:

2.7.1.1 BMP 7.1 – Minimize Chloride Contributions to Red Brook

Responsible Party – Public Works Director (with implementation assistance from Cumberland County Soil and Water Conservation District)

Chloride is often an identified stressor of Urban Impaired Streams that receive MS4 discharges. While the Red Brook Watershed Management Plan does not specifically identify chloride as a stressor in this watershed, other indicators where identified, such as elevated conductivity readings in the stream, which have a direct connection to chloride. When the Red Brook Watershed Management Plan was completed in 2011, the impact of chloride on urban stream water quality was not well understood. Since the development of the Red Brook Watershed Management Plan, Maine DEP has documented elevated chloride levels in watersheds that include highway interchanges and other significant transportation infrastructure. While Red Brook's watershed has a total area of only 3.2 square miles, this watershed includes: Interstate I-95 Exit 44 and Exit 45 interchanges with I-295 and the State arterials of Payne Road and Gorham Road (Rt 114). A portion of the Red Brook watershed is also a designated growth area in Scarborough and South Portland and includes major commercial development in the lower portion of the watershed.

The Town has already taken several actions over the past few years to minimize chloride contributions during deicing and will continue to implement the following chloride reduction practices, which are also specified in the 2015 Maine BMP Manual for Snow and Ice Control:

- Annual review of appropriate application rates with crew at beginning of winter season;

- Use of ground speed control and annual equipment calibration to ensure proper application rates;
- Recalibration of equipment whenever major repairs are made;
- Adjust application rates based on current or forecasted weather conditions;
- Outfit a portion of the fleet with segmented plow blades that adhere to shape of roads, and;
- Use of liquid (prewetting) to improve performance and to reduce "bounce and scatter" when applying sodium chloride.

Although there are two regional pilot programs beginning in 2021 that target chloride reduction by private applicators, there is still a need for a statewide chloride-reduction program, public education around chloride, and limited liability legislation for private applicators.

The Town will implement the following Measurable Goals related to chloride reduction in the Red Brook watershed.

Measurable Goal 7.1a – At least one representative from the Town will attend an annual regional training or roundtable to learn about new chloride reduction techniques coordinated by the ISWG or another organization.

Measurable Goal 7.1b – The Town will complete the following actions to facilitate future chloride reduction by private contractors:

- In Permit Year 1 and alternating years thereafter until it passes, the Town will provide educational outreach regarding limited liability legislation to legislators and at least two other organizations representing firms that conduct application of chloride on private property. The Town will also provide comments on any drafted legislation and provide educational testimony at the committee level. The information provided will identify how chloride affects water quality and how limited liability legislation will support a training, data collection, and certification program like the New Hampshire "Green Snow Pro" program or Minnesota's Smart Salting Training Program for private applicators.
- In years when limited liability legislation has not passed and is not active for procedural reasons, the Town will provide winter maintenance education and outreach to the public. The messaging will be delivered using two tools per year selected from Appendix D.
- Should the legislation be successful, the following steps will be taken:
    - The first year after it passes, the Town will provide a presentation to the Town Council to inform them of the new law.
    - Beginning the second and subsequent years after passage, the Town will educate property owners/managers, private contractors, and/or the public on winter maintenance practices to maintain public safety and protect the environment. This outreach will be delivered using two tools per year selected from Appendix D.

2.7.1.2 BMP 7.2 – Implement the Red Brook Water Quality Monitoring Plan

Responsible Party - Town Engineer (with implementation assistance from the City of South Portland)

The water quality data on which the Red Brook Watershed Management Plan (WMP) was collected in 2002 and 2010. As noted in Section 1.4 of this SWMP, many of the actions recommended in the Red Brook WMP have been completed, but recent water quality data is lacking. To determine the success of WMP implementation efforts and to understand current water quality conditions, the Town will work in collaboration with the City of South Portland to implement the measurable goals outlined below.

Measurable Goal 7.2a – In Permit Year 1, the Town and the City of South Portland will work with Maine DEP to develop a water quality monitoring plan that identifies monitoring site locations and parameters. The plan will include at least one site in Scarborough and one site in South Portland to assist in characterizing current conditions in each municipality's portion of the watershed. It will also identify the seasons and time period over which the sampling plan will be implemented (e.g., water quality data collection during late winter/early spring snow melt conditions and mid-late summer base flow conditions).

The following water quality parameters and techniques are anticipated:

- Continuous water quality monitoring data will be collected using YSI 6000 series data sondes and/or Onset Hobo data loggers, which will be provided by DEP depending on availability. Continuously monitored parameters will include temperature, conductivity, specific conductance and potentially dissolved oxygen depending on equipment availability.
- Grab sampling will be done using a handheld YSI field meter provided by the City of South Portland. Grab sample parameters will include temperature, conductivity and specific conductance.
- Simultaneous grab samples may also be collected to be analyzed by a local contract lab to measure chloride levels. These data will facilitate a chloride-conductivity regression analysis. Results from this analysis will allow future specific conductance readings to be used a surrogate for chloride.

Measurable Goal 7.2b – During Permit Year 2, the Town and the City of South Portland will implement the Red Brook water quality monitoring plan using applicable elements of the DEP's Quality Assurance Project Plan (QAPP) and/or Sampling & Analysis Plan (SAP). South Portland's Stormwater Program Coordinator will work directly with DEP to deploy and retrieve continuous monitoring equipment in at least two locations during the specified time periods (e.g., late winter and mid-late summer). DEP will calibrate and prepare YSI sondes and/or Onset Hobo loggers prior to deployment and will also conduct post-deployment equipment maintenance and data transfer. DEP will share sonde and/or logger results with the Town and the City of South Portland. South Portland's Stormwater Program Coordinator may also periodically collect paired conductivity and chloride sampling during the monitoring periods and transport chloride samples to a local lab for analysis.

Measurable Goal 7.2c – During Permit Year 3, the Town and the City of South Portland will compile and analyze the collected data for review by the Red Brook Watershed Management Plan Working Group (see BMP 7.3). This data analysis and review will determine if additional water quality monitoring is needed and provide a more accurate representation of watershed conditions.

Measurable Goal 7.2d – During Permit Years 4 and 5, the Town and the City of South Portland will summarize the water quality data collected for use in the Red Brook Watershed Management Plan

Amendment (BMP 7.3).

2.7.1.3 BMP 7.3 – Develop an Amendment to the Red Brook Watershed Management Plan

Responsible Party – Town Engineer

The Red Brook Watershed Management Plan (WMP) was developed in 2011 based on information collected in water quality assessments from 2002 and 2010. This collaborative effort provided an Action Plan for improving water quality in this stream. Based on information received from MTA and MaineDOT, a significant number of culverts and stream corridor erosion sites identified in the WMP have been addressed. This work by the transportation agencies, along with the in-stream restoration, culvert replacement, and retrofit projects administered by the Town, leaves minimal viable projects remaining from the 2011 WMP Action Plan. Using more recent water quality data and collecting additional data, the Town will amend the Red Brook WMP to identify additional structural and non-structural practices aimed at improving the Brook's water quality and mitigating potentially adverse impacts from future development.

Measurable Goal 7.3a – During Permit Year 1, the Town of Scarborough, will form a Working Group made up of representatives of City of South Portland, Maine DEP, MaineDOT, MTA, and other key stakeholders. The Working Group will assist the Town in completing a full assessment of the WMP Action Plan to determine outstanding items and update the NPS Site Tracker tool.

Measurable Goal 7.3b – During Permit Year 2, the Town will facilitate a series of meetings and field visits with the Working Group to assess the viability of the outstanding action items from the original WMP. The Town will gather existing information and develop a scope of work associated with any technical or specialized tasks needed as part of this amendment process. This scope of work will include budget estimates that will be presented to the Scarborough Town Council as part of the annual budget process for consideration.

Measurable Goal 7.3c – During Permit Year 3, the Working Group will review existing data to confirm or update the stressors and collect additional data to better understand the water quality and aquatic impairments. Tasks may include reviewing pre-existing watershed information, updating the stream corridor assessment, analyzing water quality data collected in BMP 7.2, and completing additional stressor identification. This work will be accomplished either utilizing consultant(s) (if funded through the annual budget process in Permit Year 2) or Town staff with support from DEP.

Measurable Goal 7.3d – During Permit Year 4, the Town of Scarborough will lead the Working Group in conducting an inventory of existing stormwater infrastructure and identify potential structural retrofits to address the identified stressors. GIS data layers, inventories of existing stormwater management systems, and municipal Comprehensive Plans will be used to inform this inventory.

Measurable Goal 7.3e – By the end of Permit Year 5, the Town of Scarborough, along with the Working Group, will submit the Amendment to the Red Brook Watershed Management Plan to Maine DEP for review and approval.

2.7.2 Phillips Brook

The Town of Scarborough and the Cumberland County Soil and Water Conservation District completed the Phillips Brook Watershed Management Plan in 2018. Maine DEP, Friends of Scarborough Marsh, MaineDOT, MTA, and local residents and stakeholders were active participants of the planning process. In 2019 the Town received funding through the Maine DEP 319 program to complete Phase 1 Implementation project within the watershed.

More details of the work completed to date are contained in Section 1.4 of this SWMP and set the framework for identification of the three BMPs that will be implemented to meet the Urban Impaired Stream requirement of the 2022 MS4 General Permit.

To meet the Urban Impaired Stream requirement of the 2022 MS4 General Permit, the Town will implement the following BMPs within the Phillips Brook Watershed:

2.7.2.1 BMP 7.4 – Minimize Chloride Contributions to Phillips Brook

Responsible Party – Public Works Director (with implementation assistance from Cumberland County Soil and Water Conservation District)

The Phillips Brook WMP identifies chloride as a stressor impacting Phillips Brook and specifically recommends education on the use of chloride coupled with a statewide winter maintenance certification program, similar to New Hampshire's "Green SnowPro" program, as a method to reduce chloride inputs in the watershed. This proposed BMP is in direct alignment with the principal goals of the WMP and is identified as a non-structural solution in the WMP.

The Town has already taken several actions over the past few years to minimize chloride contributions during deicing and will continue to implement the following chloride reduction practices, which are also specified in the 2015 Maine BMP Manual for Snow and Ice Control:

- Annual review of appropriate application rates with crew at beginning of winter season;
- Use of ground speed control and annual equipment calibration to ensure proper application rates;
- Recalibration of equipment whenever major repairs are made;
- Adjust application rates based on current or forecasted weather conditions;
- Outfit a portion of the fleet with segmented plow blades that adhere to shape of roads, and;
- Use of liquid (prewetting) to improve performance and to reduce "bounce and scatter" when applying sodium chloride.

Although there are two regional pilot programs beginning in 2021 that target chloride reduction by private applicators, there is still a need for a statewide chloride-reduction program, public education around chloride, and limited liability legislation for private applicators.

The Town will implement the following Measurable Goals related to chloride reduction in the Phillips Brook watershed.

Measurable Goal 7.4a – At least one representative from the Town will attend an annual regional training or roundtable to learn about new chloride reduction techniques coordinated by the ISWG or another organization.

Measurable Goal 7.4b – The Town will complete the following actions to facilitate future chloride reduction by private contractors:

- In Permit Year 1, and alternating years thereafter until it passes, the Town will provide educational outreach regarding limited liability legislation to legislators and at least two other organizations representing firms that apply chloride on private property. The Town will also provide comments on any drafted legislation and provide educational testimony at the committee level. The information provided will identify how chloride affects water quality and how limited liability legislation will support a training, data collection, and certification program like the New Hampshire "Green Snow Pro" program or Minnesota's Smart Salting Training Program for private applicators.
- In years when limited liability legislation has not passed and is not active for procedural reasons, the Town will provide winter maintenance education and outreach to the public. The messaging will be delivered using two tools per year selected from Appendix D.
- Should the legislation be successful the following steps will be taken:
  - The first year after it passes, the Town will provide a presentation to the Town Council to inform them of the new law.
  - Beginning the second and subsequent years after passage, the Town will educate property owners/managers, private contractors, and/or the public on winter maintenance practices to maintain public safety and protect the environment. This outreach will be delivered using two tools per year selected from Appendix D.

2.7.2.2 BMP 7.5 – Targeted Behavior Change: YardScaping 2.0

Responsible Party – Town Engineer (with implementation assistance from Cumberland County Soil & Water Conservation District)

Measurable Goal 7.5a – As identified in Section 1.4 of this SWMP, public education about preferred lawn and yard maintenance was identified as a recommendation in the Phillips Brook WMP. This BMP will provide targeted education to the residents living adjacent to Phillips Brook. The goal of the enhanced public education is to encourage residents to improve their riparian zone by creating or improving and maintaining the riparian buffer with native species to minimize erosion and to implement one of the YardScaping concepts. This BMP will incorporate targeted and regional outreach with other ISWG municipalities that have urban impaired streams. The following actions will occur each year:

- Provide one digital and one print outreach to residents abutting Phillips Brook about creating, improving, and maintaining their riparian zone.
- Offer four regional workshops on YardScaping and buffer BMPs (workshops will alternate between ISWG communities with urban impaired streams each year).
- Work with local retail partners to provide product and plant recommendations.
- Surveys will be conducted immediately after workshops and then a follow up survey will be conducted after the next growing season to evaluate behavior changes of the target audience.

2.7.2.3 BMP 7.6 – Establish a Stream Protection Overlay Zone within the Phillips Brook Watershed

Responsible Party – Town Engineer

The Town of Scarborough has successfully increased stream protection overlay districts on a local level. Many streams, including the upper corridor of Red Brook, have enhanced setback requirements. These protections, however, do not currently extend to Phillips Brook but have been identified in the Phillips Brook Watershed Management Plan as a key strategy to protect the stream corridor and improve the health of the stream. As a Town-designated Growth Area, it is important to establish a stream protection zone along Phillips Brook before more large tracts of land are developed.

Measurable Goal 7.6a – During Permit Year 2 the Town of Scarborough will develop an Implementation Plan for the Stream Protection Overlay process. This plan will be shared with residents, the development community, and decision makers to inform of key milestones associated with public hearings and other opportunities for public input. By the end of Permit Year 2, the Town will conduct public outreach associated with the proposed enhanced stream corridor protections for Phillips Brook.

Measurable Goal 7.6b – By the end of Permit Year 3 Town staff will draft an update to the Town ordinance that includes a minimum of 75-foot stream buffer along the Phillips Brook corridor as part of a Stream Protection Overlay. The draft ordinance language will be presented to the Town's Ordinance Committee for review and approval. In addition, the Town will meet with the DEP Shoreland Zone Coordinator to review the proposed mapping changes with. Feedback from both the local review and the State review will be incorporated into the final ordinance language and mapping.

Measurable Goal 7.6c – If the Ordinance Committee's review is successful, the Phillips Brook Stream Protection Ordinance will be presented to the Town Council for adoption by the end of Permit Year 4.

3 GENERAL REQUIREMENTS

3.1 Certification

The General Permit requires that this Plan be certified by either a principal executive officer or ranking elected official. This section provides the necessary certification.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

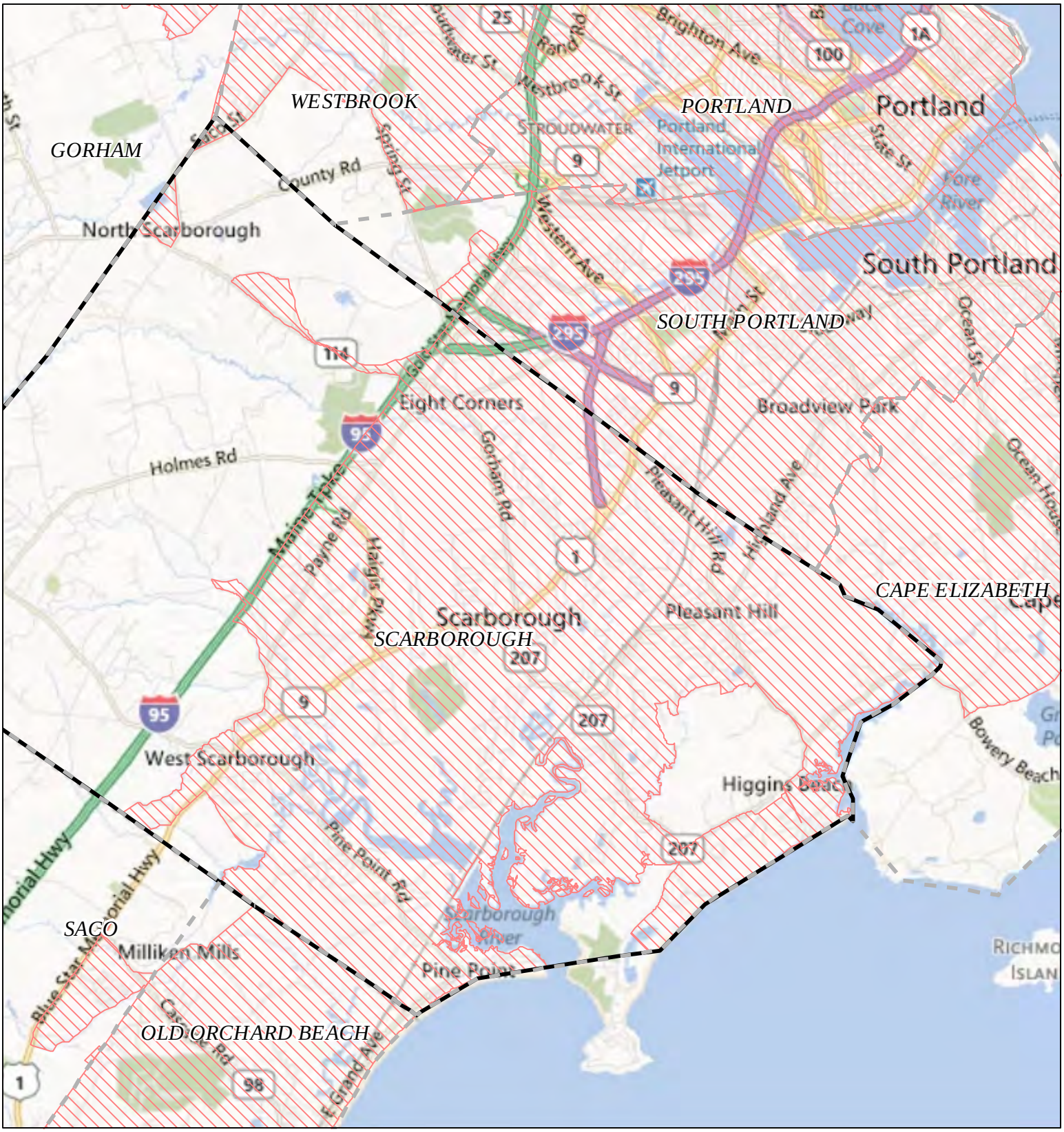
Signature: _____ Date: 3/30/21

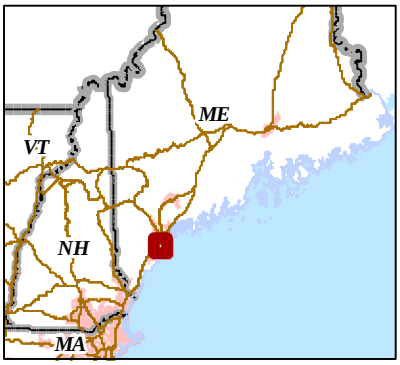
Thomas Hall

Title: Town Manager

APPENDIX A

URBANIZED AREA MAP





NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Scarborough ME

Regulated Area (2000 + 2010 Urbanized Area)

0 1 2 3 4 5 Kilometers

0 1 2 3 4 5 Miles

Town Population: 18927

Regulated Population: 14078

(Populations estimated from 2010 Census)

EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2010 Microsoft Corporation
and its data suppliers

US EPA Region 1 GIS Center Map #8824, 11/19/2012

APPENDIX B

IMPAIRED WATERS INFORMATION

TMDL Assessment Summary

Red Brook

Watershed Description

This **TMDL** assessment summary applies to a 5.4-mile section of Red Brook, located in the Town of Scarborough and the City of South Portland, Maine. Red Brook, a tributary to Clarks Pond in South Portland, begins in a wetland area north of County Road (Route 22) in Scarborough. The stream flows through a large wetland area as it travels south along Gorham Road in Scarborough. It then crosses under the Maine Turnpike (I95) next to Exit 44 in Scarborough. The brook follows I-295 and passes under it several times on its way into Clarks Pond, an impoundment draining into the Fore River and then Casco Bay. There are several large ground water fed ponds in the Red Brook watershed with outlets running into the brook. The Red Brook watershed covers 2,048 acres in the town of Scarborough and the cities of South Portland and Westbrook.

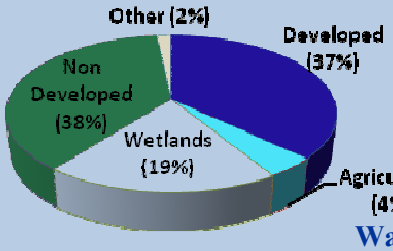
- Stormwater runoff from **impervious cover (IC)** is the largest source of pollution and stream channel alteration to Red Brook. Stormwater falling on roads, roofs and parking lots in developed areas flows quickly off impervious surfaces, carrying dirt, oils, metals, and other pollutants, and sending high volumes of flow to the nearest section of the stream.
- A number of Payne Road storm drains, which are linked directly to Red Brook, funnel runoff from roads and large parking lots down to the stream.
- Red Brook's close proximity to the Maine Mall and Maine Turnpike makes much of the undeveloped areas within the watershed susceptible to new development.
- Taking a proactive approach, the Town of Scarborough is developing the Red Brook Watershed Based Management Plan in collaboration with the Cumberland County Soil & Water Conservation District.

Definitions

- **TMDL** *is an acronym for* ***Total Maximum Daily Load****, representing the total amount of a pollutant that a water body can receive and still meet water quality standards.*
- **Impervious cover** *refers to landscape surfaces (e.g. roads, sidewalks, driveways, parking lots, and rooftops) that no longer absorb rain and may direct large volumes of stormwater runoff into the stream.*

Waterbody Facts

- **Segment ID:** ME0106000105_610R07
- **City:** Scarborough and South Portland, ME
- **County:** Cumberland
- **Impaired Segment Length:** 5.4 miles
- **Classification:** Class C
- **Direct Watershed:** 3.2 mi² (2,048 acres)
- **Watershed Impervious Cover:** 11%
- **Major Drainage Basin:** Presumpscot River and Casco Bay Watershed



Watershed Land Uses

Why is a TMDL Assessment Needed?

Red Brook downstream of Station 219.
(Photo: Maine DEP Biomonitoring Program)

Red Brook, a Class C freshwater stream, has been assessed by DEP as not meeting water quality standards for polychlorinated bisphenyls (PCBs) and aquatic life use, and has been listed on the 303(d) list of impaired waters. The Clean Water Act requires that all 303(d)-listed waters undergo a TMDL assessment that describes the impairments and establishes a target to guide the measures needed to restore water quality. The goal is for all waterbodies to comply with state water quality standards.

Fish shocking by DEP in 1994 exposed PCB levels within fish tissue above the standard threshold. (DEP, 1996) The suspected sources for PCBs within Red Brook are inappropriate waste disposal and unspecified urban stormwater. The impervious cover TMDL assessment for Red Brook does *not* address the impairment for PCBs. It does, however, address the impairment for aquatic life use (stream habitat assessment). This impairment is associated with a variety of pollutants in urban stormwater as well as erosion, habitat loss and unstable stream banks caused by excessive amounts of runoff.

Sampling Results & Pollutant Sources

Sampling Station	Sample Date	Statutory Class	Model Results
S-412-HQ	2010	C	C
S-413	2010	C	C

The physical habitat within and surrounding a stream is important to its water quality. In Red Brook, due to development near the stream, the physical habitat has become degraded. Development has replaced natural forest and wetland areas with impervious cover around much of the stream. This degradation has resulted in Red Brook being listed as impaired for habitat assessment. The impervious cover increases the volume and force of water entering the stream shortly after rain, bringing in pollutants and eroding the stream bank, further degrading the streams habitat (Varricchione, 2002).

Red Brook's impairment is based on a 2002 stream habitat assessment by DEP (Varricchione, 2002). DEP's 2010 benthic-macroinvertebrate assessment indicates that Class C Red Brook meets Class C aquatic life criteria.

Impervious Cover Analysis

> ***8% IC*** *represents an approximate* ***27% reduction*** *in stormwater runoff volume and associated pollutants when compared to existing pollutant loads.*

Increasing the percentage of impervious cover (%IC) in a watershed is linked to decreasing stream health (CWP, 2003). Because Red Brook's impairment is not caused by a single pollutant, %IC is used for this TMDL to represent the mix of pollutants and other impacts associated with excessive stormwater runoff. The Red Brook watershed has an impervious surface area of **11%** (Figure 1). DEP has found that in order to support Class C aquatic life use, the Red Brook watershed may require the characteristics of a watershed with **8%** impervious cover. The target for Red Brook is lower than the target recommended for Class C streams in, IC Guidance (Appendix 2), of the TMDL report. Not all watersheds are created equally and the guidance does include an option to apply Best Professional Judgment when choosing streams' targets.

The development is concentrated in the most downstream portion of the watershed (Figure 1) and exerts a disproportionate effect on the lower impaired stream segment. This segment does exhibit characteristics associated with impairment due to stormwater runoff, therefore a target was chosen to reduce the impact of IC and achieve water quality classification. The relative contribution of this development needs to be evaluated during the development of a Watershed Specific Plan, as recommended in the IC TMDL.

Impervious Cover GIS Calculations

The Impervious Cover Calculations are based on analysis of GIS coverage's presented in Figure 1. The impervious area is derived from 2007 1 meter satellite imagery and the watershed boundary is an estimation based on contours and digital elevation models.

This WLA & LA target is intended to guide the application of Best Management Practices (BMP) and Low Impact Development (LID) techniques to reduce the *impact* of impervious surfaces. Ultimate success of the TMDL will be Red Brook's continued compliance with Maine's water quality criteria for aquatic life and attainment of compliance with the criteria for habitat assessment and PCB contamination.

Next Steps

Because Red Brook is an impaired water, specific sources of stormwater runoff in the watershed should be considered during the development of a watershed management plan to:

- Continue to encourage greater citizen involvement to ensure the long term protection of Red Brook through processes such as the Red Brook Planning Project. Undertaken by the town of Scarborough and the Cumberland County SWCD in collaboration with the City of South Portland, Maine DOT, and DEP;
- Address existing stormwater problems in the Red Brook watershed by installing structural and applying non-structural best management practices (BMPs); and
- Prevent future degradation of Red Brook through the development and/or strengthening of local stormwater control ordinances.

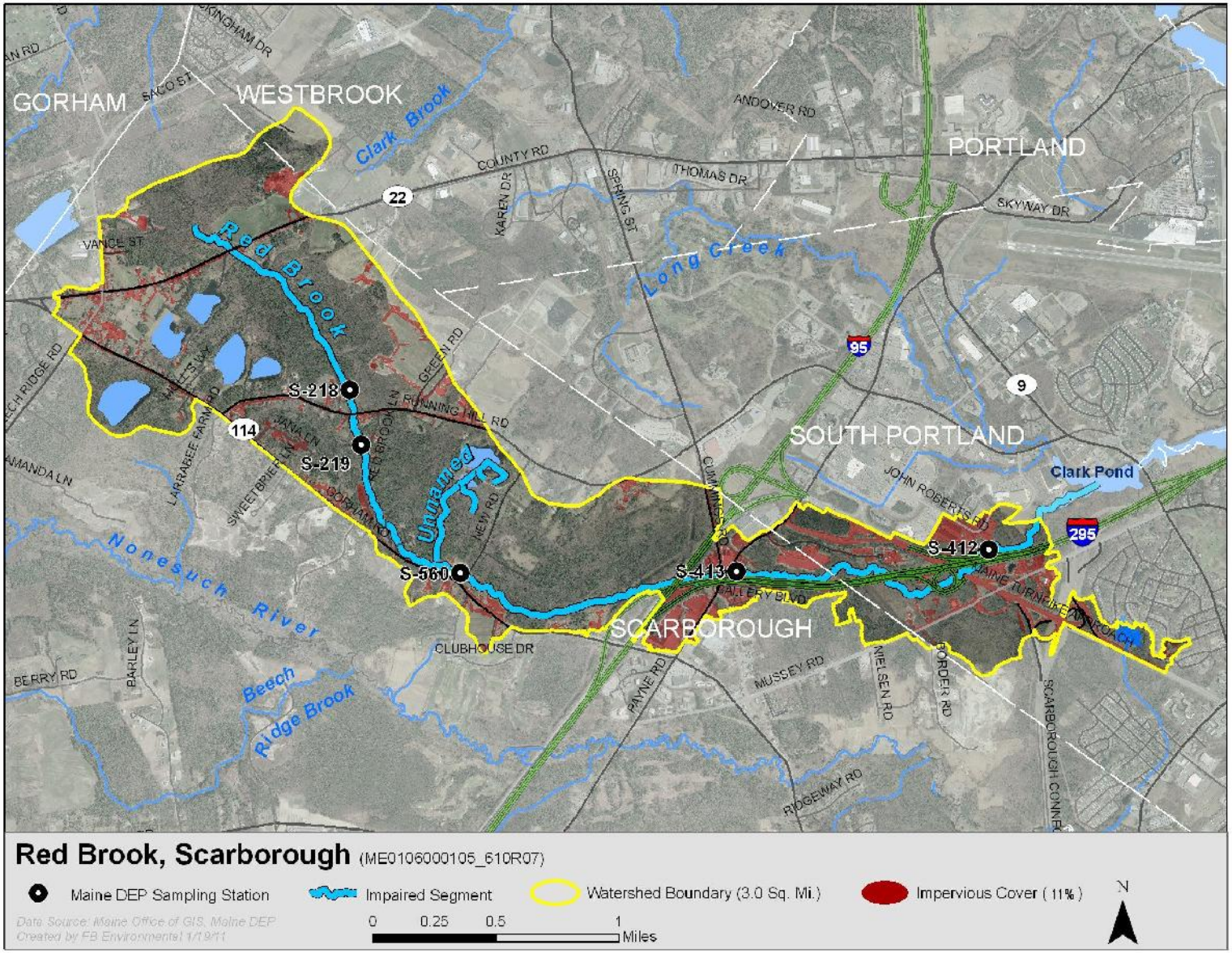


Figure 1: *Map of Red Brook watershed impervious cover.*

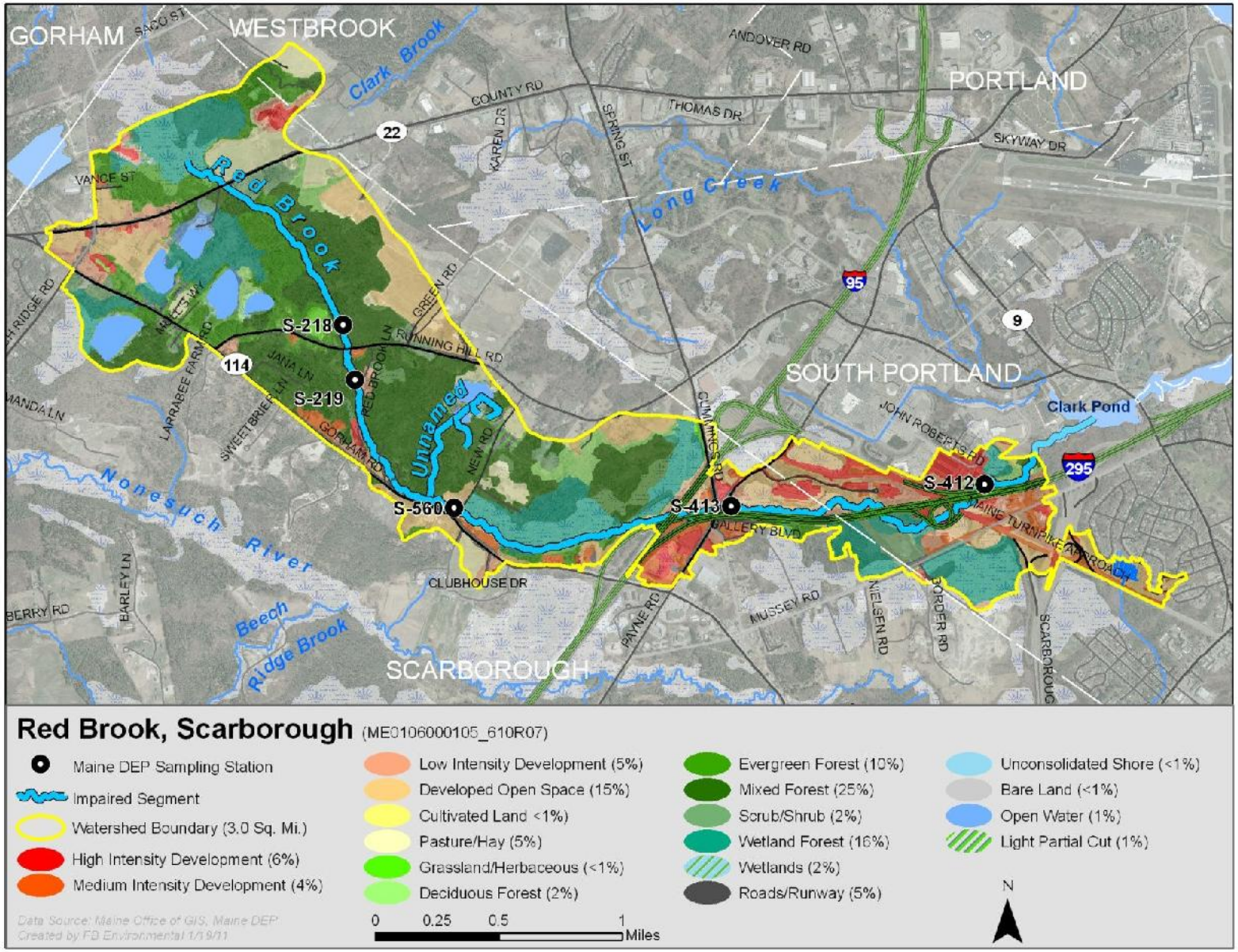


Figure 2: *Map of Red Brook watershed land cover.*

References

Center for Watershed Protection (CWP). 2003. Impacts of Impervious Cover on Aquatic Systems. Watershed Protection Research Monograph No. 1. Center for Watershed Protection, Ellicott City, MD. 142 pp.

Maine Department of Environmental Protection (DEP). 2010a. Draft 2010 Integrated Water Quality Monitoring and Assessment Report. Bureau of Land and Water Quality, Augusta, ME. DEPLW-1187.

Maine Department of Environmental Protection (DEP). 1996. Surface water ambient toxic monitoring program: 1994 report. Bureau of Land and Water Quality, Augusta, Maine.

Varricchione, Jeffery T. 2002. A Biological, Physical and Chemical Assessment of Two Urban Streams in Southern Maine: Long Creek & Red Brook. Volume I Maine Department of Environmental Protection. Revised December, 2002. DEPLW0572

TMDL Assessment Summary

Phillips Brook

Watershed Description

This **TMDL** assessment summary applies to Phillips Brook, a 2.77-mile stream located in the Town of Scarborough, Maine. Phillips Brook, a small tributary to Scarborough Marsh, begins in a mixed forest area between the Maine Turnpike and US Route 1 in Scarborough. The stream flows parallel to U.S. Route 1 and through a field before passing under Broadturn Road. It then flows under Payne Road near the road's intersection with US Route 1. Shortly thereafter it flows into a very large wetland area where it passes under US Route 1. The brook then flows into Scarborough Marsh east of Pine Point Road in Scarborough. The Phillips Brook watershed covers 653 acres in the towns of Scarborough and Saco.

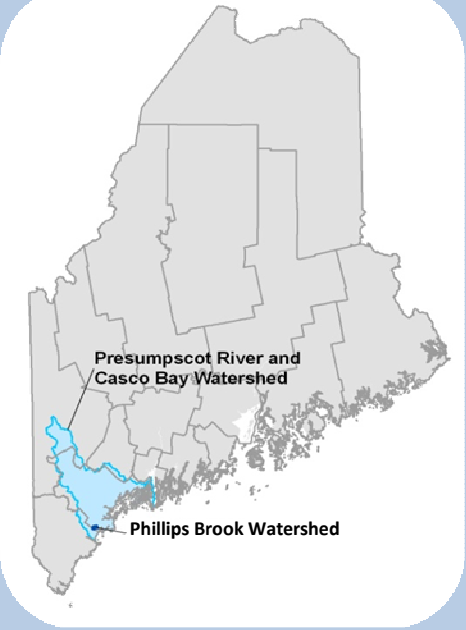
- Stormwater runoff from **impervious cover (IC)** is the largest source of pollution to Phillips Brook. Stormwater falling on roads, roofs and parking lots in developed areas flows quickly off impervious surfaces, carrying dirt, oils, metals, and other pollutants, and sending high volumes of flow to the nearest section of the stream.
- A number of Payne Road and US Route 1 storm drains and ditches, which are linked directly to Phillips Brook, funnel runoff from roads and parking lots down to the stream.
- Development has surrounded the stream near the end of its course around US Route 1 and Payne Road. This encroachment has removed important wetland areas and degraded the habitat around Phillips Brook in these areas.
- Remaining wetland and woodlands in a large portion of the lower Phillips Brook watershed absorb and filter stormwater pollutants, and help protect both water quality

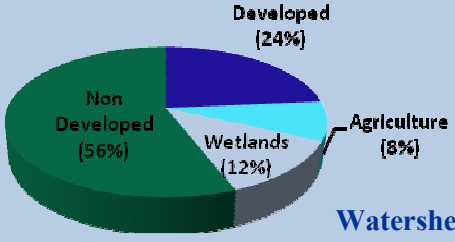
Definitions

- **TMDL** *is an acronym for* ***Total Maximum Daily Load****, representing the total amount of a pollutant that a water body can receive and still meet water quality standards.*
- **Impervious cover** *refers to landscape surfaces (e.g. roads, sidewalks, driveways, parking lots, and rooftops) that no longer absorb rain and may direct large volumes of stormwater runoff into the stream.*

Waterbody Facts

- **Segment ID:** ME0106000104_611R02
- **City:** Scarborough, ME
- **County:** Cumberland
- **Impaired Segment Length:** 2.77 miles
- **Classification:** Class C
- **Direct Watershed:** 1.02mi² (653 acres)
- **Watershed Impervious Cover:** 9%
- **Major Drainage Basin:** Presumpscot River and Casco Bay Watershed





Watershed Land Uses

in the stream and stream channel stability.

Why is a TMDL Assessment Needed?

Phillips Brook, a Class C freshwater stream, has been assessed by DEP as not meeting standards for aquatic life use, and has been listed on the 303(d) list of impaired waters. The Clean Water Act requires that all 303(d)-listed waters undergo a TMDL assessment that describes the impairments and establishes a target to guide the measures needed to restore water quality. The goal is for all waterbodies to comply with state water quality standards.

Phillips Brook upstream of site 953.
(Photo: FB Environmental)

The impervious cover TMDL assessment for Phillips Brook addresses water quality impairments for dissolved oxygen and aquatic life (stream habitat assessments). These impairments are associated with a variety of pollutants in urban stormwater as well as erosion, habitat loss and unstable stream banks caused by excessive amounts of runoff.

Sampling Results & Pollutant Sources

Due to development near the stream, the physical habitat in and around Phillips Brook has become degraded. Development has replaced natural forest and wetland areas with impervious cover around much of the stream. The new impervious cover increases the volume of water entering the stream shortly after rain, carrying pollutants and eroding the stream bank, further degrading the streams habitat (Varricchione, 2002). This impairment is based on DEP's stream habitat assessments. Phillips Brook was also sampled by DEP for macro-invertebrates for the first time in the summer of 2010, but the final results for that sampling event are not yet available (DEP, 2010b).

Sampling Station	Sample Date	Statutory Class	Model Results
S-953	8/16/2010	B	I

Phillips Brook was also sampled near Payne Road by DEP for aquatic life (instream macroinvertebrates) in the summer of 2010 and results indicate Phillips is "indeterminate" (I), meaning too few organisms were collected to meet the minimum needed to statistically determine classification (DEP, 2010b). DEP makes aquatic life use determinations using a statistical model that incorporates 30 variables of data collected from rivers and streams, including the richness and abundance of streambed organisms, to determine the probability of a sample meeting Class A, B, or C conditions. Biologists use the model results and supporting information to determine if samples comply with standards of the class assigned to the stream or river (Davies and Tsomides, 2002).

Impervious Cover Analysis

***6% IC** represents an approximate **33% reduction** in stormwater runoff volume and associated pollutants when compared to existing pollutant loads.*

Increasing the percentage of impervious cover (%IC) in a watershed is linked to decreasing stream health (CWP, 2003). Because Phillips Brook's impairment is not caused by a single pollutant, %IC is used for this TMDL to represent the mix of pollutants and other impacts associated with excessive stormwater runoff. The Phillips Brook watershed has an impervious surface area of **9%** (Figure 1). DEP has found that in order to support Class C aquatic life use, the Phillips Brook watershed may require the

characteristics of a watershed with **6%** impervious cover. The target for Phillips Brook is lower than the target recommended for Class C streams in, IC Guidance (Appendix 2), of the TMDL report. Not all watersheds are created equally and the guidance does include an option to apply Best Professional Judgment when choosing streams' targets. The development is concentrated in the most downstream portion of the watershed (Figure 1) and exerts a disproportionate effect on the lower impaired stream segment. This segment does exhibit some characteristics associated with impairment due to stormwater runoff, therefore a target was chosen to reduce the impact of IC and achieve water quality classification. The stream is a low gradient flow system with associated wetland areas, which may also influence the downstream portion of the stream. The relative contribution of the slow flow and wetland needs to be evaluated during the development of a Watershed Specific Plan, as recommended in the IC TMDL.

Impervious Cover GIS Calculations

The Impervious Cover Calculations are based on analysis of GIS coverage's presented in Figure 1. The impervious area is derived from 2007 1 meter satellite imagery and the watershed boundary is an estimation based on contours and digital elevation models.

This TMDL target is intended to guide the application of Best Management Practices (BMP) and Low Impact Development (LID) techniques to reduce the *impact* of impervious surfaces. Ultimate success of the TMDL will be Phillips Brook's compliance with Maine's criteria for habitat assessment.

Next Steps

Because Phillips Brook is an impaired water, stormwater runoff in the watershed should be considered during the development of a watershed management plan to:

- Encourage greater citizen involvement (e.g. through the Friends of Scarborough Marsh) to ensure the long term protection of Phillips Brook;
- Address existing stormwater problems in the Phillips Brook watershed by installing structural and applying non-structural best management practices (BMPs); and
- Prevent future degradation of Phillips Brook through the development and/or strengthening of local stormwater control ordinances.

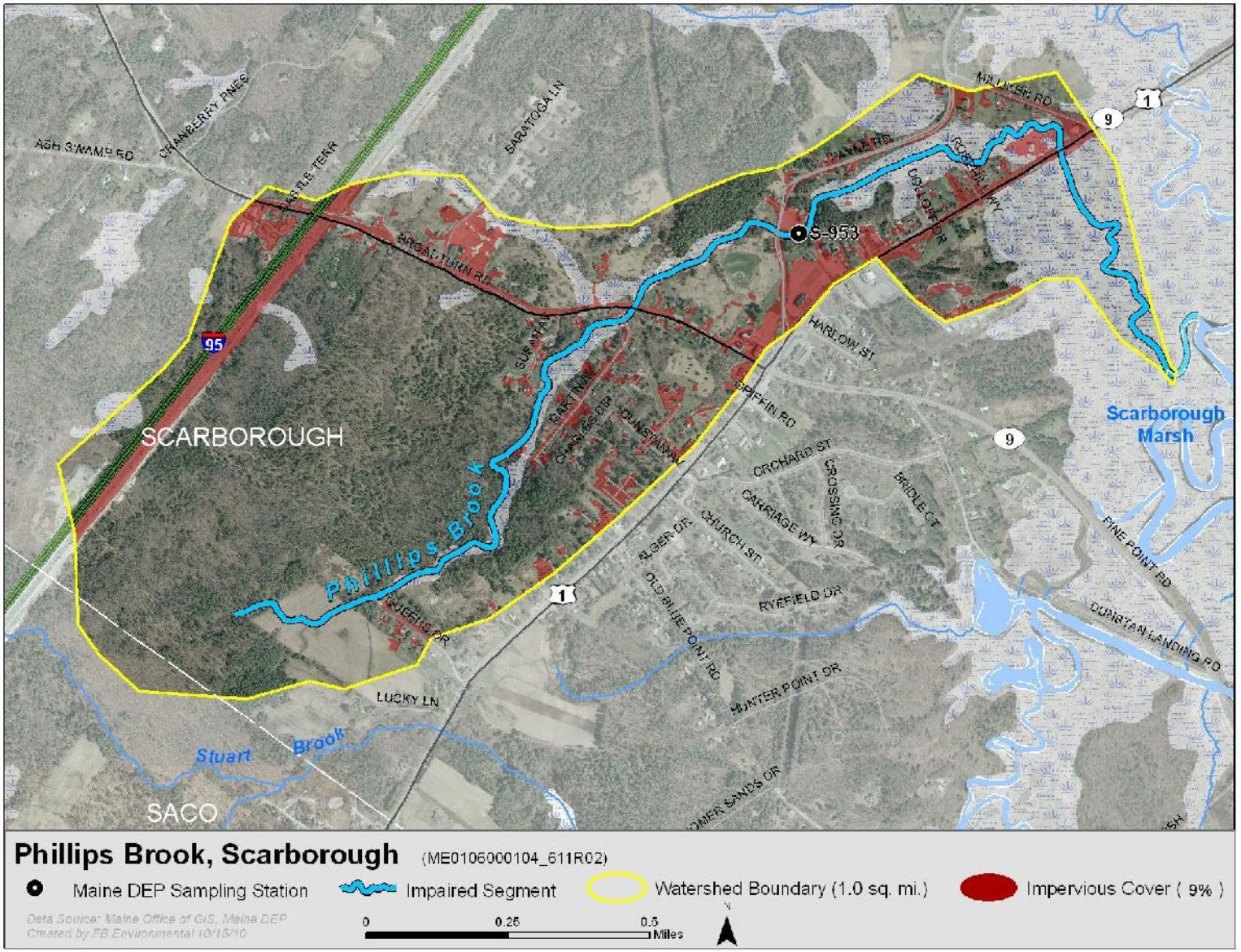


Figure 1: *Map of Phillips Brook watershed impervious cover.*

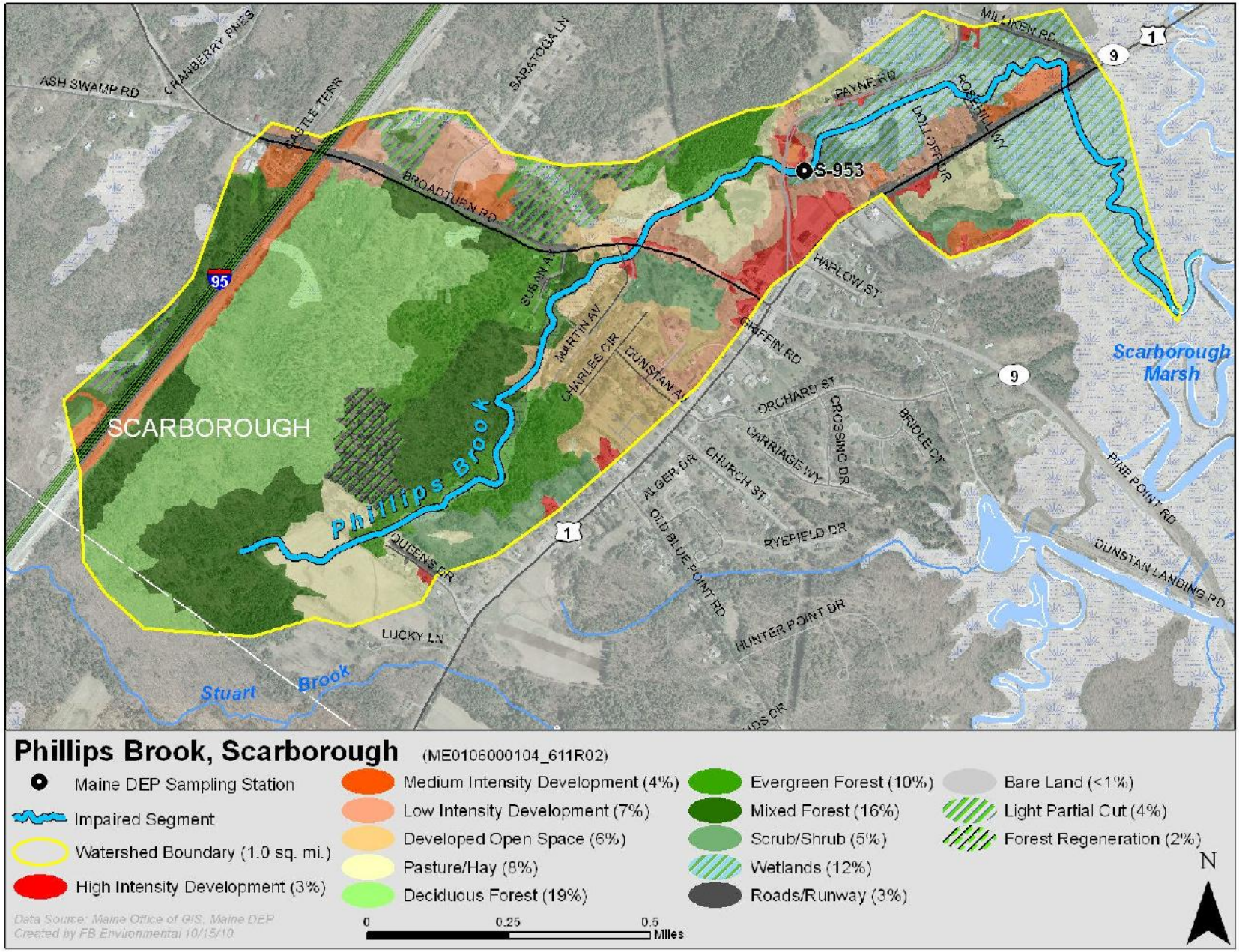

Phillips Brook, Scarborough
(ME0106000104_611R02)
Maine DEP Sampling Station
Impaired Segment
Watershed Boundary (1.0 sq. mi.)
High Intensity Development (3%)
Medium Intensity Development (4%)
Low Intensity Development (7%)
Developed Open Space (6%)
Pasture/Hay (8%)
Deciduous Forest (19%)
Evergreen Forest (10%)
Mixed Forest (16%)
Scrub/Shrub (5%)
Wetlands (12%)
Roads/Runway (3%)
Bare Land (<1%)
Light Partial Cut (4%)
Forest Regeneration (2%)
N
0
0.25
0.5
Miles
Data Source: Maine Office of GIS, Maine DEP
Created by FB Environmental 10/15/10
S-953
SCARBOROUGH
Phillips Brook
Stuart Brook
Scarborough Marsh
ASH SWAMP RD
CRANBERRY PNES
CASTLE TERR
SARATOGA LN
MILLIKEN RD
RAYNE RD
FOREHILL WY
DOLLOFF DR
BROADTURN RD
SUSAN AV
MARTIN AV
CHARLES CIR
DUNSTAN AV
HARLOW ST
GRIFFIN RD
ORCHARD ST
CROSSING DR
CARRIAGE WY
BRIDLE CT
CHURCH ST
ALGER DR
OLD BLUE POINT RD
RYEFIELD DR
PINE POINT RD
DUNSTAN LANDING RD
HUNTER POINT DR
QUEENS DR
LUCKY LN
95
1
9

Figure 2: *Map of Phillips Brook watershed land cover.*

References

Center for Watershed Protection (CWP). 2003. Impacts of Impervious Cover on Aquatic Systems. Watershed Protection Research Monograph No. 1. Center for Watershed Protection, Ellicott City, MD. 142 pp.

Davies, Susan P. and Leonidas Tsomides. 2002. Methods for Biological Sampling and Analysis of Maine's Rivers and Streams. Maine Department if Environmental Protection. Revised August, 2002. DEP LW0387-B2002.

Maine Department of Environmental Protection (DEP). 2010a. Draft 2010 Integrated Water Quality Monitoring and Assessment Report. Bureau of Land and Water Quality, Augusta, ME. DEPLW-1187.

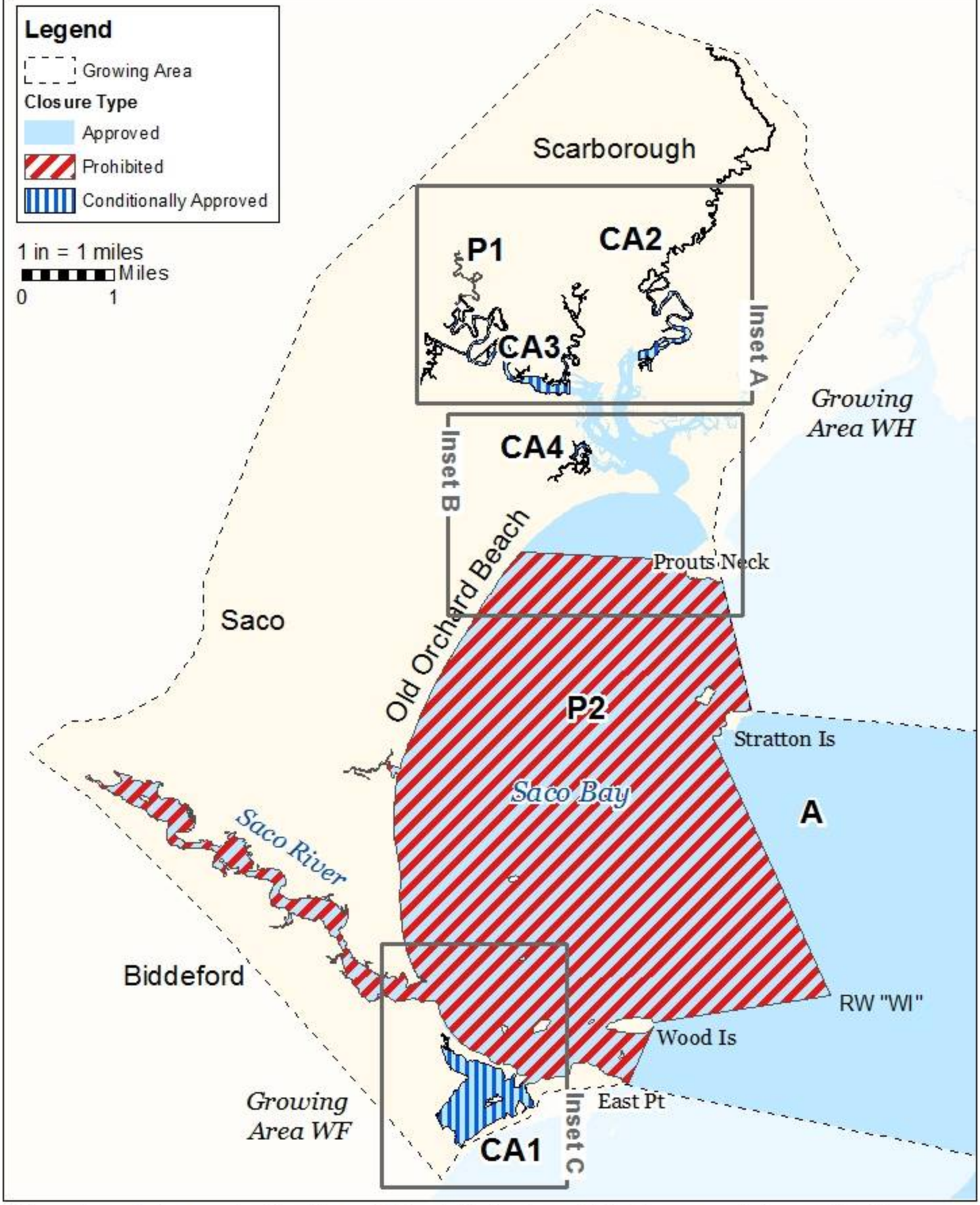
Maine Department of Environmental Protection (DEP). 2010b. Assessment Database Detail Report for Phillips Brook (Scarborough). Bureau of Land and Water Quality, Augusta, ME.

Varricchione, Jeffery T. 2002. A Biological, Physical and Chemical Assessment of Two Urban Streams in Southern Maine: Long Creek & Red Brook. Volume I Maine Department of Environmental Protection. Revised December, 2002. DEPLW0572

Maine Department of Marine Resources

Growing Area WG, Insets A - C

Scarborough, Saco, Old Orchard Beach, Biddeford

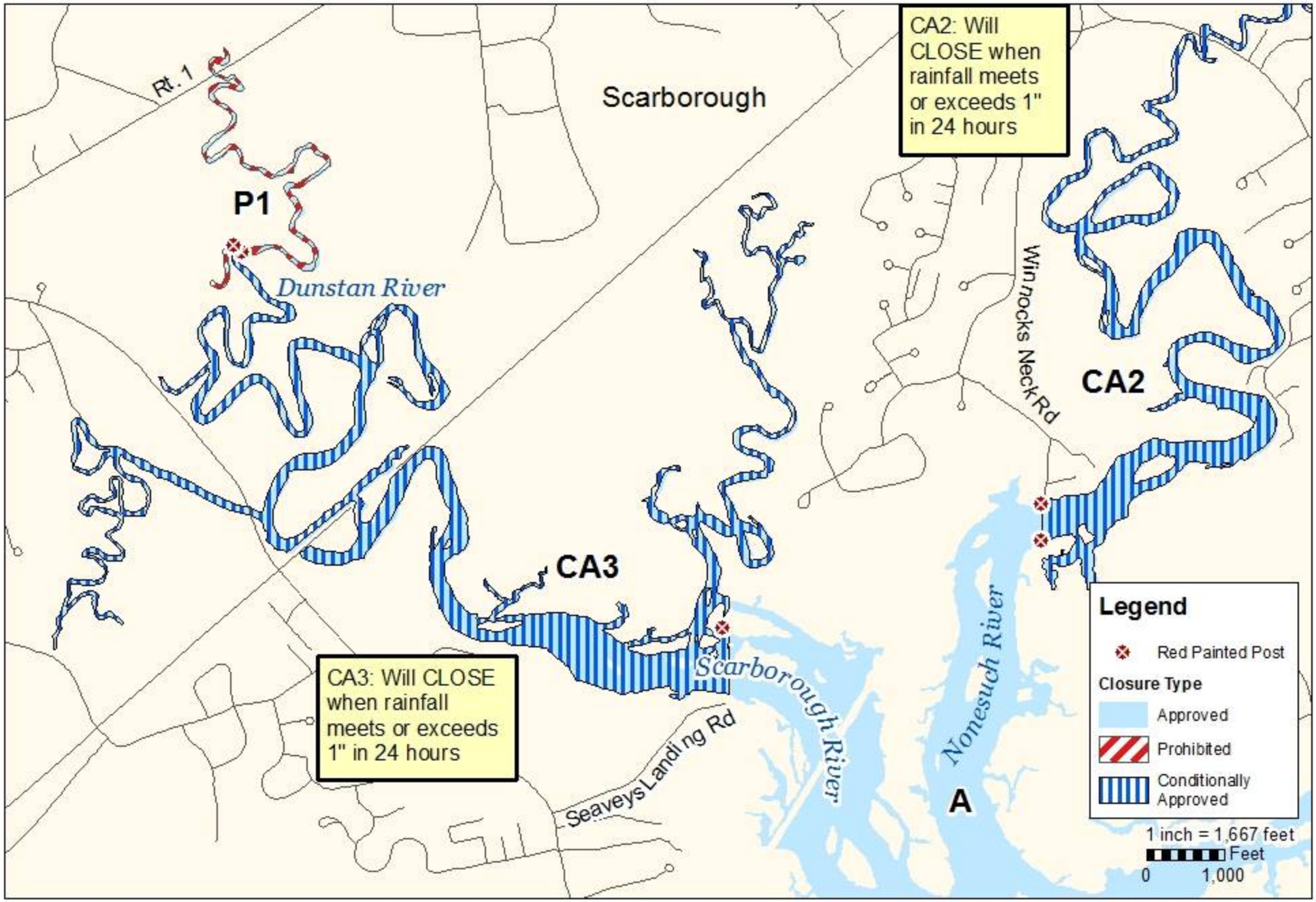


This map is provided as a courtesy. Read the provided legal notice for closure details. Closures are not shown outside of the designated growing area. Maritime navigational aids are for reference only and are not suitable for maritime navigation.

Maine Department of Marine Resources

Growing Area WG, Inset A

Scarborough

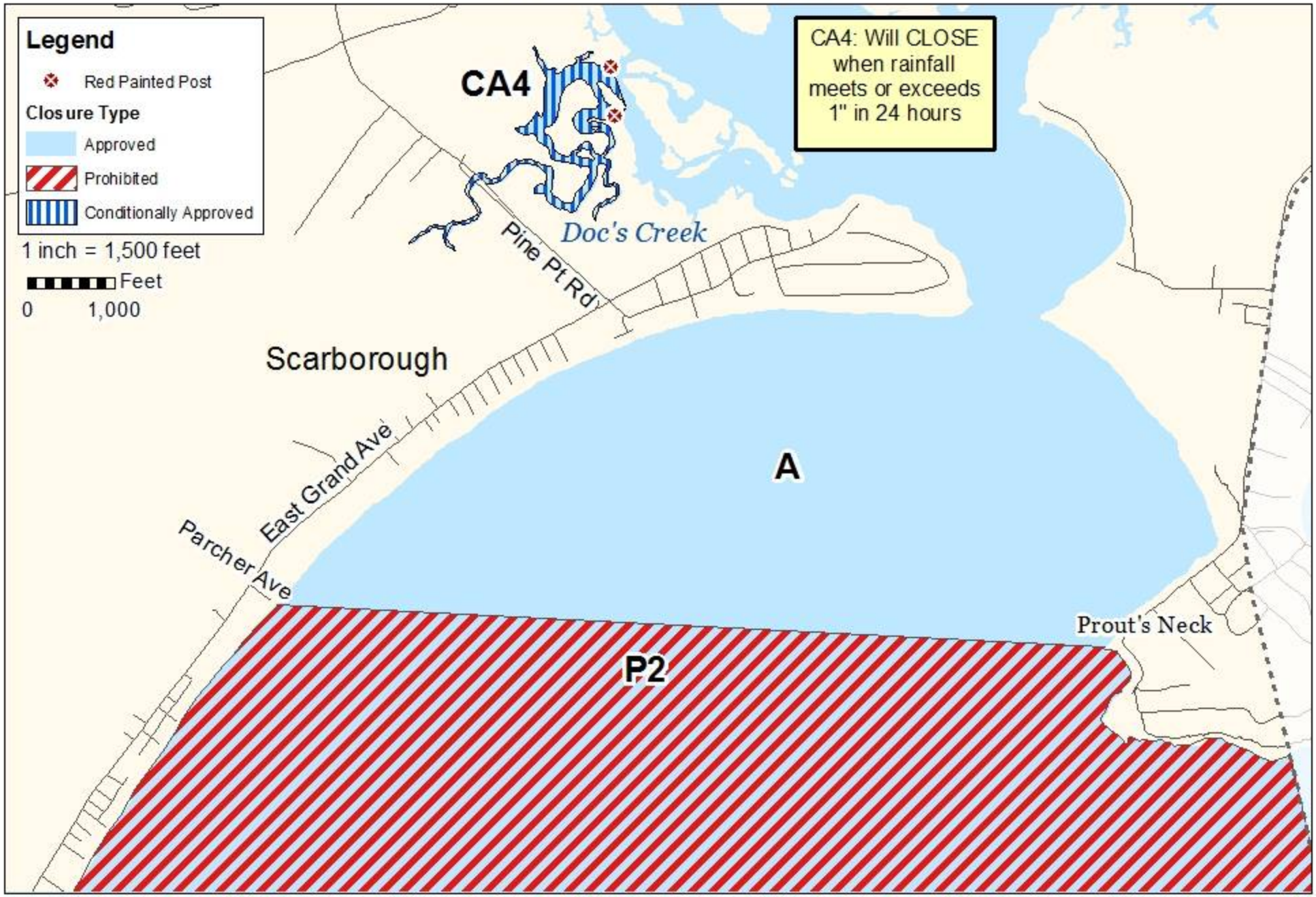


This map is provided as a courtesy. Read the provided legal notice for closure details. Closures are not shown outside of the designated growing area. Maritime navigational aids are for reference only and are not suitable for maritime navigation.

Maine Department of Marine Resources

Growing Area WG, Inset B

Scarborough, Old Orchard Beach



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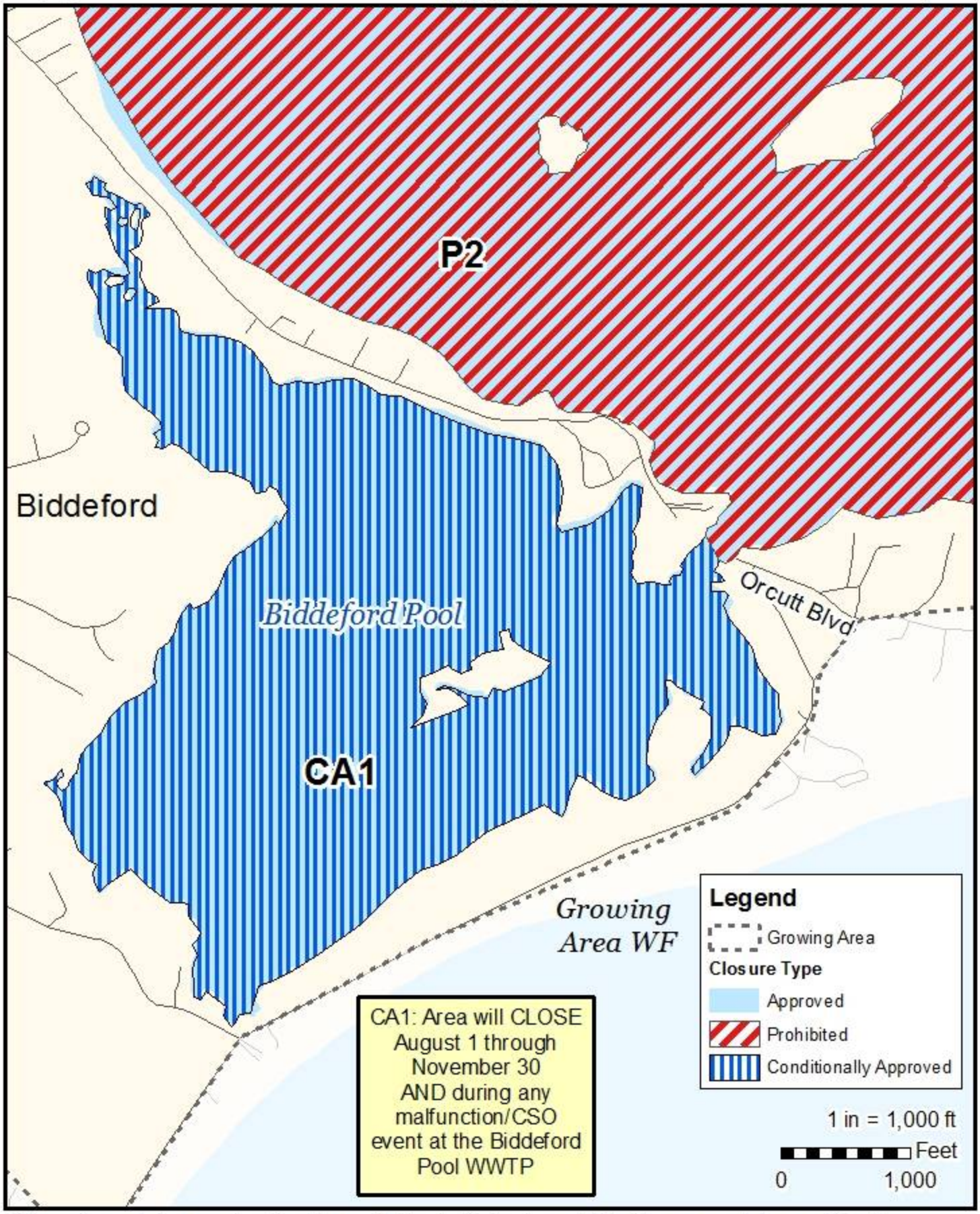
Maine Department of Marine Resources

Growing Area WG, Inset C

Biddeford



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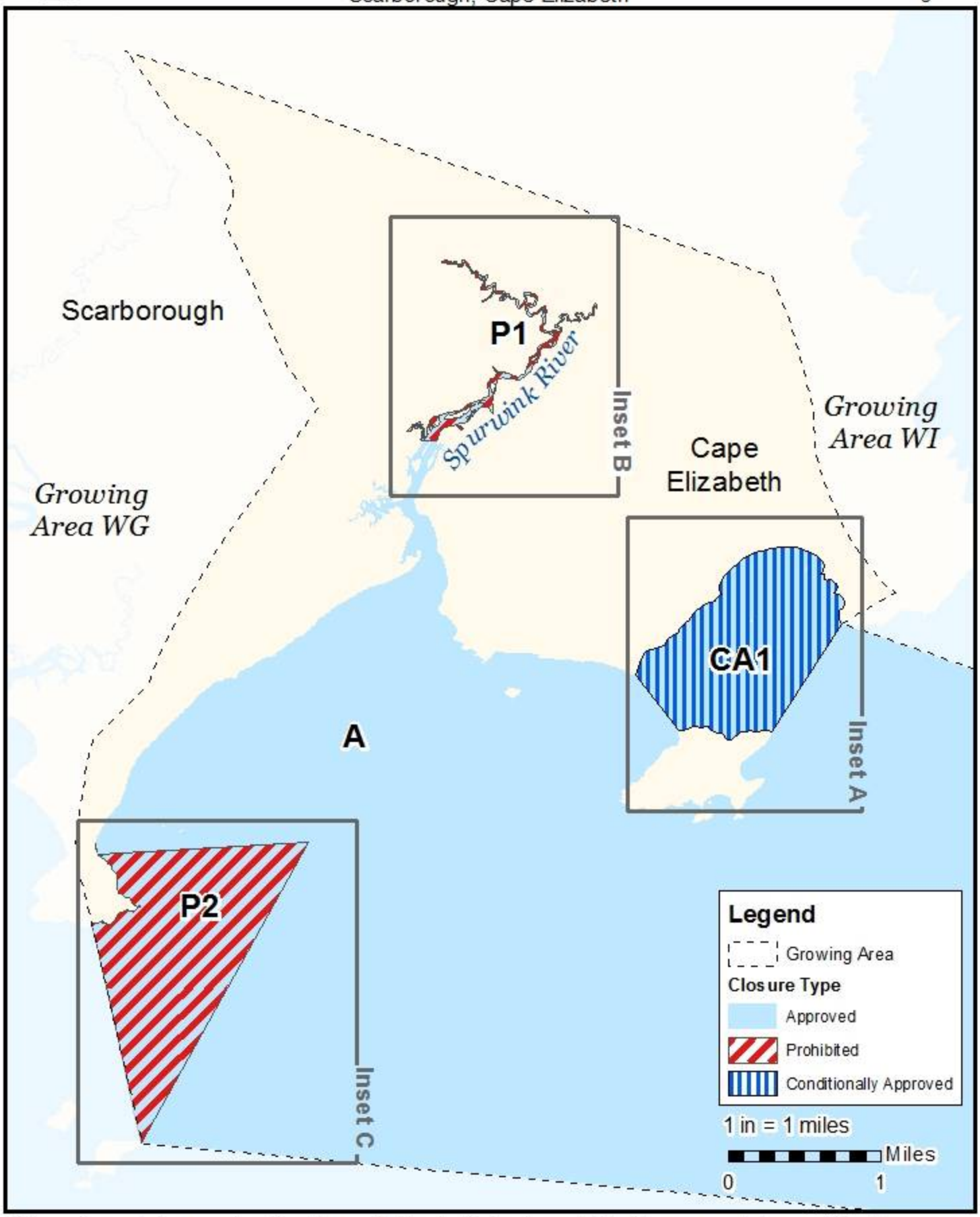
Maine Department of Marine Resources

Growing Area WH, Insets A - C

3/1/2021

Scarborough, Cape Elizabeth



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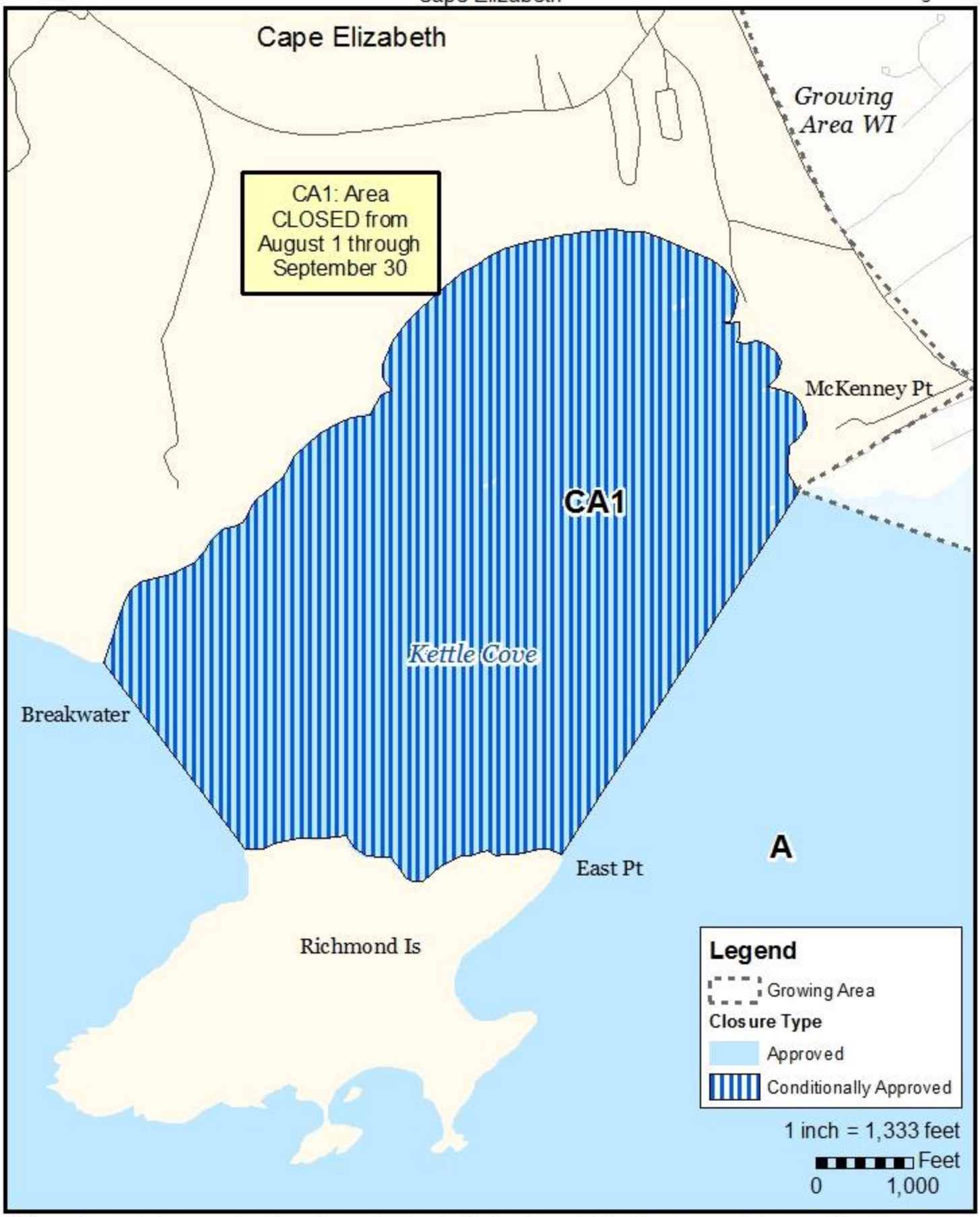
Maine Department of Marine Resources

Growing Area WH, Inset A

3/1/2021

Cape Elizabeth



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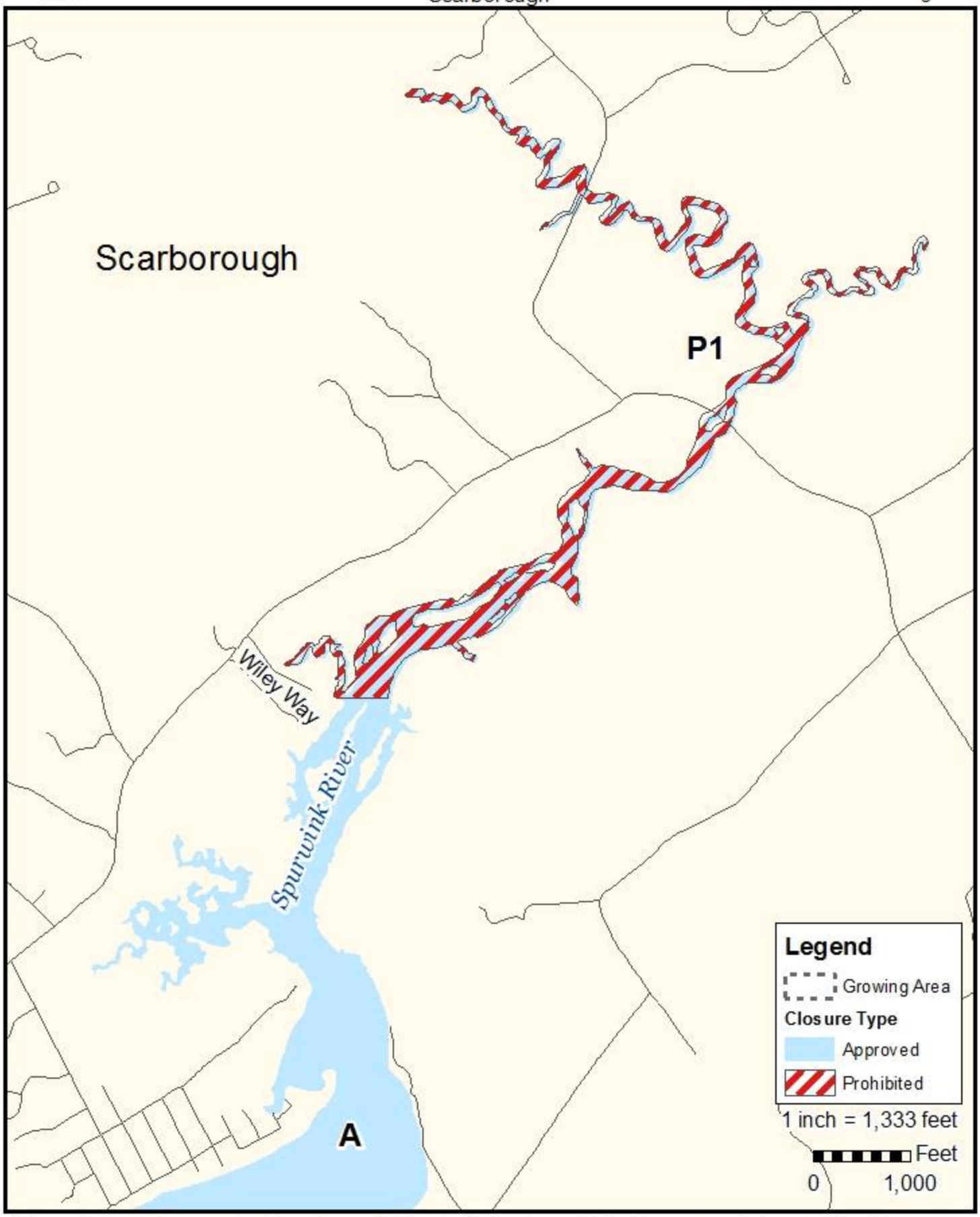
Maine Department of Marine Resources

Growing Area WH, Inset B

Scarborough

3/1/2021



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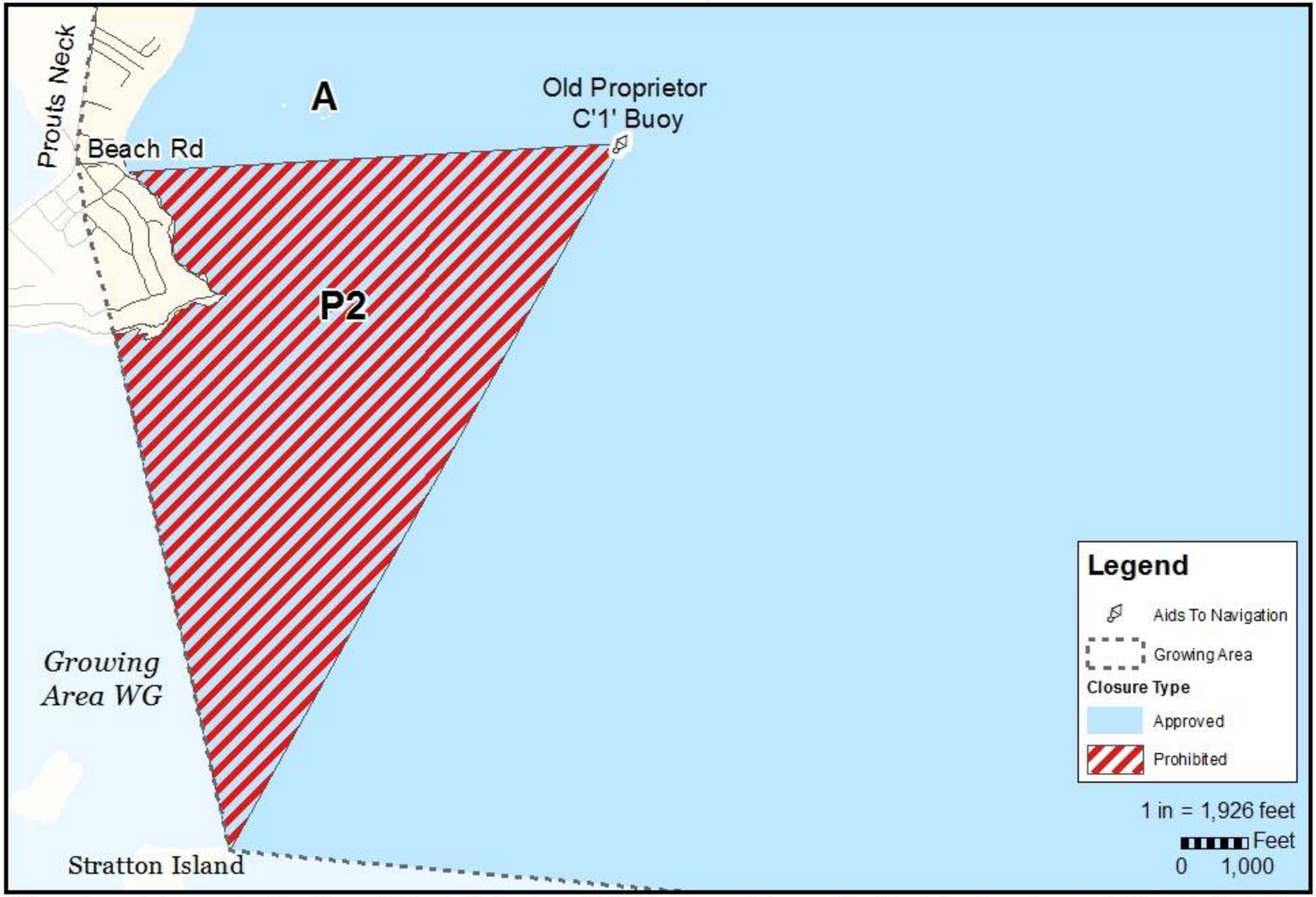
Maine Department of Marine Resources

Growing Area WH, Inset C

Scarborough

3/1/2021



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APPENDIX C1

NOTICE OF INTENT AND PUBLIC NOTICES

NOTICE OF INTENT TO COMPLY WITH MAINE GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

PERMITTEE INFORMATION					
MS4 Entity	Town of Scarborough			Permittee ID #	MER041028
Name and title of chief elected official or principal executive officer	Thomas Hall, Town Manager				
Mailing Address	PO Box 360				
Town/City	Scarborough	State	ME	Zip Code	04070
Daytime Phone	207-730-4030	Email	thall@scarboroughmaine.org		
PRIMARY CONTACT PERSON FOR OVERALL STORMWATER MANAGEMENT PROGRAM (if different than PEO/CEO)					
Name and Title	Angela Blanchette				
Mailing Address	PO Box 360				
Town/City	Scarborough	State	ME	Zip Code	04070
Daytime Phone	207-730-4040	Email	ablanchette@scarboroughmaine.org		
STORMWATER MANAGEMENT PLAN (SWMP)					
Urbanized Area (sq. mi.)	~20 (see attached map of UA)				
I have attached our updated SWMP with ordinances, SOPs, forms. ☐					
Name of streams, wetlands, or waterbodies to which the regulated small MS4 discharges (*attach additional sheets as necessary*): See attached					
List of impaired waterbodies that receive stormwater from the regulated small MS4 (*attach additional sheets as necessary*): Red Brook, Phillips Brook					

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Permittee	Thomas J. Hall	Date	3/30/21

This NOI registration form must be filed with the Department at the following address:

Stormwater Program Manager
Maine Department of Environmental Protection
Bureau of Water Quality
17 State House Station
Augusta ME 04333-0017
Rhonda.Poirier@maine.gov

OFFICE USE ONLY							
Date Recieved		Staff		Date Accepted		Date Not Accepted	

TOWN OF SCARBOROUGH, MAINE

Town of Scarborough MS4 Receiving Waters

Red Brook
Stroudwater River
Spurwink River
Scarborough River, including the following tributaries:

- Phillips Brook
- Libby River
- Nonesuch River
- Mill Brook
- Willowdale Brook
- Stuart Brook
- Jones Creek

Saco Bay

TOWN OF SCARBOROUGH, MAINE

PUBLIC NOTICE

For release week of February 22, 2021

Contact: Angela Blanchette, PE - Town Engineer
207-730-4040; ablanchette@scarboroughmaine.org

The Town of Scarborough will file a Notice of Intent (NOI) to comply with the Maine General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued 10/15/2020 (MER041000 W009170-5Y-C-R) and an associated Stormwater Management Plan (SWMP) with the Maine Department of Environmental Protection (DEP). The NOI and SWMP will be filed on or about March 31, 2021. A copy may also be seen at the Scarborough municipal offices and on the Town's website: scarboroughmaine.org.

The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: maine.gov/dep/comment. A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information.

The NOI and SWMP are also available for viewing at the DEP Office in Augusta by scheduled appointment during normal business hours during the pandemic. Written public comments or requests for information may be made to the Division of Water Quality Management, Department of Environmental Protection, State House Station #17, Augusta, ME 04333- 0017; telephone (207) 592-6233 and must include the name of the municipality filing the NOI and the Permit number provided above.

Portland Press Herald
EST 1862
Maine Sunday Telegram
pressherald.com

Classified Advertising Proof

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Thank you

(207) 791-6100 jjensen@mainetoday.com Monday – Friday 8:00 am – 5pm

Order Number	**0246341**	Order Price	**$325.95**
Sales Rep.	**Joan Jensen**	PO No.	**NOI / Doreen Christ**
Account	**9820**	Payment Type	**Invoice**
Publication	**Portland Press Herald**	Number of dates	**1**
First Run Date	**02/26/2021**	Last Run Date	**02/26/2021**
Publication	**Online Upsell PPH**	Number of dates	**1**
First Run Date	**02/26/2021**	Last Run Date	**02/26/2021**

Public Notice

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The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: maine.gov/dep/comment. A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information.

The NOI and SWMP are also available for viewing at the DEP Office in Augusta by scheduled appointment during normal business hours

during the pandemic. Written public comments or requests for information may be made to the Division of Water Quality Management, Department of Environmental Protection, State House Station #17, Augusta, ME 04333- 0017; telephone (207) 592-6233 and must include the name of the municipality filing the NOI and the Permit number provided above.

TOWN OF SCARBOROUGH, MAINE

PUBLIC NOTICE

For release March 31, 2021

Contact: Angela Blanchette, PE - Town Engineer
207-730-4040; ablanchette@scarboroughmaine.org

The Town of Scarborough will file a Notice of Intent (NOI) to comply with the Maine General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued 10/15/2020 (MER041000 W009170-5Y-C-R) and an associated Stormwater Management Plan (SWMP) with the Maine Department of Environmental Protection (DEP). The NOI and SWMP will be filed on March 31, 2021. A copy may also be seen at the Scarborough municipal offices and on the Town's website: scarboroughmaine.org.

The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: maine.gov/dep/comment. A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information.

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Portland Press Herald
EST 1862
Maine Sunday Telegram
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Publication	**Portland Press Herald**	Number of dates	**1**
First Run Date	**03/31/2021**	Last Run Date	**03/31/2021**

Publication	**Online Upsell PPH**	Number of dates	**1**
First Run Date	**03/31/2021**	Last Run Date	**03/31/2021**

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Maine Department of Environmental Protection (DEP). The NOI and SWMP will be filed on March 31, 2021. A copy may also be seen at the Scarborough municipal offices and on the Town's website: scarboroughmaine.org.

The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: maine.gov/dep/comment. A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information.

The NOI and SWMP are also available for

viewing at the DEP Office in Augusta by scheduled appointment during normal business hours during the pandemic. Written public comments or requests for information may be made to the Division of Water Quality Management, Department of Environmental Protection, State House Station #17, Augusta, ME 04333-0017; telephone (207) 592-6233 and must include the name of the municipality filing the NOI and the Permit number provided above.

Publication Date
2021-03-31

Subcategory
Miscellaneous Notices

The Town of Scarborough will file a Notice of Intent (NOI) to comply with the Maine General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued 10/15/2020 (MER041000 W009170-5Y-C-R) and an associated Stormwater Management Plan (SWMP) with the Maine Department of Environmental Protection (DEP). The NOI and SWMP will be filed on March 31, 2021. A copy may also be seen at the Scarborough municipal offices and on the Town's website: scarboroughmaine.org . The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: maine.gov/dep/comment . A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information. The NOI and SWMP are also available for viewing at the DEP Office in Augusta by scheduled appointment during normal business hours during the pandemic. Written public comments or requests for information may be made to the Division of Water Quality Management, Department of Environmental Protection, State House Station #17, Augusta, ME 04333- 0017; telephone (207) 592-6233 and must include the name of the municipality filing the NOI and the Permit number provided above.

APPENDIX C2

PUBLIC COMMENTS ON 2022 STORMWATER MANAGEMENT PLAN

APPENDIX C3

PERMITTEE SPECIFIC DEP ORDER

APPENDIX D

EDUCATION & OUTREACH TOOLS, LEVELS OF EFFORT, AND EFFECTIVENESS BENCHMARKS

Below is a list of tools with their corresponding minimum level of effort and effectiveness benchmark that will be selected from each year to implement BMP 1.1 and 1.2.

Outreach Tool	Minimum Level of Effort	Effectiveness Benchmark
Poster	10 posters/Town	Total number of posters distributed
Flyer	1 flyer	Total number of flyers distributed
Brochure	1 brochure	Total number of brochures distributed
Rack Card	1 rack card	Total number of rack cards distributed
Newsletter Article	2 newsletter articles	Total number of newsletters distributed
Post Card	1 post card	Total number of postcards distributed
Factsheet	1 factsheet	Total number of factsheets distributed
Sign	5 signs/Town	Total number of signs distributed
Story Walk	1 story walk	Number of QR code (or similar technology) scans from signs
Story Map	1 regional story map	Number of visitors to webpage
Stormwater Geocaching	1 regional activity (14 sites)	Number of participants per site
Augmented Reality App	1 regional activity (14 sites)	Number of app downloads Number of engagements within the app
Municipal Electronic Message Board	3 messages	Amount of time message was displayed
Email Newsletter	4 email newsletters	Number of people reached with email Number of interactions with email (e.g., link clicks)
Municipal Website Content	Annual updates to website stormwater content	Number of visitors to stormwater webpage(s)
Think Blue Maine Website Content	Semiannual updates to website content	Number of visitors to website
Social Media Post (each platform counts as separate tool)	12 posts	Amount of post engagement (e.g., reactions, comments, shares, etc.)
Social Media Ad (each platform counts as separate tool)	Ad(s) run 90 days (multiple ads may be run for shorter durations to total 90 days)	Amount of ad engagement (e.g., reactions, comments, shares, link clicks, etc.) Number of people reached with ad
Social Media Video (each platform counts as separate tool)	3 videos	Amount of video engagement (e.g., views, reactions, comments, shares, etc.)
Online ad	Ad(s) run 90 days (multiple ads may be run for shorter durations to total 90 days)	Number of people reached with ad Amount of ad engagement (e.g., link clicks)
Radio Ad	1 radio ad	Number of people reached with ad
Radio Segment	1 radio segment	Number of people reached with segment
Television Ad (broadcast or streaming)	1 television ad	Number of people reached with ad
Television News Segment (broadcast or streaming)	1 television news segment	Number of people reached with segment
Newspaper Article	1 newspaper article	Number of people reached with article
Newspaper Ad	1 newspaper ad	Number of people reached with ad
Webinar/Workshop	7 hours of training offered (multiple	Number of workshop attendees

	webinars/workshops may be offered to reach 7 hours)	
Social Gathering	3 events	Number of interactions
Tabling	3 events	Number of interactions
Outreach partnership with local retailer	50% of industry retailers in region participating	Number of local retailers participating
Outreach partnership with local organization	3 content shares by partner organization	Number of people reached
Item with branding/messaging	1 item with branding/messaging	Total number of items distributed
A DEP-approved tool	Minimum level of effort will be determined based on the tool	Effectiveness benchmark will be determined based on the tool

APPENDIX E

IDDE PLAN

Illicit Discharge Detection and Elimination Plan

For the

Town of Scarborough, Maine

For the

2022 General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems

June 2015

Revised March 2021

Table of Contents

List of Attachments

A. SCARBOROUGH WATERSHED MAP
B. INSPECTION FIELDS AND DOMAINS IN GIS
C. QUALITY ASSURANCE PROJECT PLAN
C. COORDINATION LETTERS WITH INTERCONNECTED MS4S

1.0 INTRODUCTION

The Town of Scarborough is subject to the requirements of the Maine Department of Environmental Protection (DEP) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (hereafter referred to as the MS4 General Permit).

The MS4 General Permit requires permittees to address six Minimum Control Measures (MCM) throughout the Town's Urbanized Area:

1. Education/Outreach on Storm Water Impacts
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development and Redevelopment
6. Pollution Prevention/Good Housekeeping for Municipal Operations

This document describes the IDDE Plan for the Town of Scarborough, Maine. The IDDE Plan described in this document fulfills the MCM 3 IDDE requirements specified in Part IV.C.3.b of the 2022 MS4 General Permit.

1.1 IDDE Responsibilities in the Town of Scarborough

The Town's Public Works Director is responsible for overall permit compliance and for implementation of this IDDE Plan. The following Town personnel support implementation of this Plan:

Public Works staff: Conduct outfall, ditch, and catch basin inspections and monitoring; conduct illicit discharge investigations, supported by third party contractors where necessary.

Planner: Facilitates any required ordinance changes related to non-stormwater discharges through Planning Board.

Town Engineer: Oversees construction and post-construction stormwater inspections and compliance.

GIS Administrator: Serves as primary administrator for ArcGIS ESRI licensing (for mapping).

Code Enforcement Officer/Health Inspector: Assists Public Works staff in illicit discharge investigations when needed (e.g., if plumbing inspections are needed).

1.2 Amendments and updates to the IDDE Plan

The MS4 General Permits are designed to provide coverage for five-year periods. The first MS4 General Permit applicable to the Town of Scarborough became effective in 2003 and expired in 2008. Subsequent General Permits were issued, providing the Town with continuous coverage for their stormwater discharges.

This IDDE Plan was developed to meet the requirements of the 2022 MS4 General Permit. This Plan will be updated if any of the following occur:

- A new permit is issued which changes the requirements described in this IDDE Plan document;
- The Town of Scarborough identifies that the Plan is not effective, or;
- Municipal operations change which need to be reflected in this Plan.

The Public Works Director or designee will either modify this IDDE Plan or engage a third party to update the document.

The following table briefly summarizes the origin and amendments to this document.

Date of Document	**Description of changes**
June 2015	Development of document from Stormwater Management Plan BMPs and Measurable Goals.
March 2021	Updated document to reflect 2022 MS4 General Permit requirements including QAPP and required inspection fields and domains for the GIS.

1.3 Typical Illicit Discharges

The Center for Watershed Protection (CWP) developed a comprehensive IDDE Manual in 2004 and provided an abbreviated update in 2011, which classifies illicit discharges into three categories related to frequency of discharge. This categorization allows communities to develop a comprehensive IDDE Plan that will address all kinds of illicit discharges. The three categories of illicit discharges identified in the CWP manual are described below along with examples of the types of discharges that may be encountered:

1. Transitory illicit discharges are typically one-time events resulting from spills, breaks, dumping, or accidents. Examples of transitory illicit discharges include:
    a. Paint equipment rinse water
    b. Carpet cleaning water
    c. Sediment from construction sites

d. Wash water from vehicles other than individual residential car washing by an owner
e. Oil or gasoline spill from a vehicle crash or other source
f. Yard waste
g. Litter or pet waste

Transitory illicit discharges are often reported to an authority through a citizen complaint line or following observation by a municipal employee during regular duties. Because they are not recurring, they are the most difficult to investigate, trace, and remove. The best method to reduce transitory discharges is through general public education, education of municipal personnel to minimize spills and accidents, tracking of discharge locations (to identify potential patterns associated with spills), and enforcement of an illicit discharge ordinance.

2. Intermittent illicit discharges occur occasionally over a period of time (several hours per day, or a few days per year). Intermittent discharges can result from legal connections to the storm drain system, such as a legal sump pump connection that is illegally discharging washing machine water, a single home sanitary connection, or from illegal connections such as floor drains from industrial or commercial operations. Intermittent discharges can also result from activities such as excessive irrigation or wash down water from exterior areas. The 2022 General Permit requires that MS4s consider illicit discharges that might result from dumping. For example, trash or litter dumped in/near stormwater structures might leak leachate into the system intermittently. Because intermittent discharges are longer lasting than transient, they are more likely to be discovered during an opportunistic or regularly scheduled inspection. They are less difficult to trace and remove than transitory discharges but can still present significant challenges. These discharges can have large or small impacts on water bodies depending on pollutant content.

3. Continuous illicit discharges are typically the result of a direct connection from a sanitary sewer, overflow from a malfunctioning septic system, or inflow from a nearby subsurface sanitary sewer that is malfunctioning. Continuous illicit discharges are usually easiest to trace and can have the greatest pollutant load but are typically the most costly and time consuming to correct because they likely involve construction and alteration of subsurface connections. (CWP and Robert Pitt, 2004)

1.4 Overview of IDDE Plan Components

The MS4 General Permit requires an IDDE Plan be developed and implemented to assist the Town in locating and eliminating Illicit Discharges. An overview of each component of the Plan is provided in this subsection, and the remaining sections of this document describe how the Town of Scarborough is implementing each component.

- Development of a Watershed-based Map: The Town is required to develop a watershed-based map of the storm sewer system infrastructure including: catch basins, connecting surface and subsurface infrastructure, the direction of in-flow and out-flow of pipes, and the locations of all discharges from the Town's MS4 outfalls into any other interconnected MS4 or receiving water. The catch basins and outfalls must have unique identifiers. The following outfall information is included in the map system: the type of outfall (connected pipe, culvert, or ditch), the material, its size, the name and location of the nearest named water body to which it discharges. Section 2.0 of this document describes the Town's watershed-based map.

- Authority to Prohibit Illicit Discharges: To the extent allowable under state or local law, the Town must effectively prohibit, through an ordinance or other regulatory mechanism, non-storm water discharges into the system and implement appropriate enforcement procedures and actions. Section 3.0 of this document describes how the Town's Non-Storm Water Discharge Ordinance is implemented.

- Identification of High Priority Areas for Inspections: Prior MS4 General Permits required that the Town identify priority areas that need to be protected from illicit discharges. The 2022 MS4 General Permit does not have this requirement, but it does require that the Town have "Procedures for prioritizing watersheds." The Town of Scarborough conducts inspections more frequently than the 2022 MS4 General Permit requires, so they continue to conduct inspections in the priority watershed first. The Town's high priority areas are described in Section 4.0 of this document, including a discussion of the basis for determining the high priority areas.

- Procedures to Locate Illicit Discharges (inspections): The Town must develop procedures for locating illicit discharges by conducting dry weather outfall inspections and assessing catch basins for evidence of pollutants. The Town also conducts opportunistic ditch inspections. The 2022 MS4 General Permit also requires monitoring be conducted on outfalls that are flowing during dry weather.

Section 5.0 of this document describes the Town's inspection Plan.

- Procedures to Investigate and Remove Illicit Discharges: The Town must develop procedures for locating the source of the discharge and procedures for the removal of the source. Sections 6.0 and 7.0 of this document describe how the Town investigates potential discharges to determine their sources and removes illicit discharges once the source is discovered.

- Procedures to Document Illicit Discharges: The Town must develop procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to the removal. Section 8.0 describes how the Town tracks illicit discharges.

Section 9.0 of this document describes the record retention requirements of the MS4 General Permit, and Section 10.0 of this document provide references.

2.0 STORMWATER INFRASTRUCTURE MAP

The Town of Scarborough maintains stormwater infrastructure information in Geographic Information System (GIS) format. Scarborough's stormwater map was created from GPS data collection, review of subdivision plans, review of Maine Department of Transportation plans, and from public works knowledge of storm water infrastructure. Field verification has been used when needed to refine locations and infrastructure information.

The Public Works Department maintains the stormwater GIS layers in ArcGIS Online. The Town's Public Works Director has overall responsibility for data integrity. The ArcGIS license (Basic) is maintained on a computer in the public works department.

Stormwater infrastructure information is available to the general public through the Town's WebGIS (webapps2.cgis-solutions.com/scarboroughadvanced/). The following subsections provide general information on the infrastructure naming protocols and procedures in use that keep the maps updated.

2.1 Infrastructure Naming Protocols

The Town of Scarborough has historically referenced eleven watersheds within its Urban Area. The areas are shown on the figure contained in Attachment A.

Below is a list of watersheds that are within the Urban Area of Scarborough:

- Jones Creek
- Libby River
- Mill Brook
- Nonesuch River
- Phillips Brook
- Red Brook
- Saco Bay
- Scarborough River
- Spurwink River
- Stuart Brook
- Willowdale Brook

Catch basins in the Town have a 6-digit unique identifier in the format: CB*XXXX*, where the CB identifies the asset type and X represents the catch basin number.

Outfalls have the prefix OUT followed by a unique 4-digit number.

Ditch names are simply the road names. Ditch outfalls are identified the same way as other outfalls but are identified as such within the attribute table for the asset. Ditch outfalls are inspected at the same time as other outfalls. If a structure is replaced in its same location, it retains the same asset ID and the attributes are updated to reflect when it was replaced. However, if the location is moved, the structure is given a new number.

2.2 Procedures to Update Map of Infrastructure

The following describes the scenarios under which changes to the storm drain system are typically made and how the map subsequently gets updated:

1. Generally, the Public Works Department constructs minor changes to the system based on immediate or planned need without formal design drawings. When the Public Works Department makes changes to the storm drain infrastructure, the online GIS layer is updated in the field using computer tablets and high accuracy GPS. These changes can be made as soon as infrastructure is changed or within weeks of the physical changes on the ground depending on the workload.

2. More significant changes are typically constructed after preparation of formal design drawings, such as new subdivisions or larger drainage projects. Where a private

contractor constructs the changes, the Town requires an electronic formal as-built plan be prepared and submitted to the Planning Department for subdivisions or Public Works Department for road construction projects, so that the infrastructure can be imported into the GIS. These updates are done by the GIS Administrator within weeks of receiving as-built plans.

3.0 AUTHORITY TO PROHIBIT ILLICIT DISCHARGES

The Town of Scarborough authority to prohibit illicit discharges became effective September 5, 2007 when the Town passed a non-stormwater discharge ordinance as part of Chapter 903 of the Town's Code of Ordinances. The ordinance was created from a model ordinance developed by the Maine Municipal Association for Towns that are regulated by the MS4 General Permit. Though the MS4 General Permit is only applicable to the Urbanized Area of Town, the Town implements the Stormwater and Non-Stormwater Control Ordinance in all areas of Town.

The Ordinance allows the following non-storm water discharges to the storm drain system as long as they do not cause or contribute to violations of water quality standards:

- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
- Uncontaminated pumped ground water;
- Uncontaminated flows from foundation drains;
- Air conditioning and compressor condensate;
- Irrigation water;
- Flows from uncontaminated springs;
- Uncontaminated water from crawl space pumps;
- Uncontaminated flows from footing drains;
- Lawn watering runoff;
- Flows from riparian habitats and wetlands;
- Residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used);
- Hydrant flushing and firefighting activity runoff;
- Water line flushing and discharges from potable water sources;
- Individual residential car washing;
- Discharges specified in writing by the Enforcement Authority as being necessary to protect public health and safety;
- Dye testing, with verbal notification to the Enforcement Authority prior to the time of the test;

- Drained water from swimming pools.

The Town's Public Works Director administers the ordinance and has the authority to issue a notice of violation if needed.

It should be noted that discharges associated with dye testing are also allowed with verbal notice to the Public Works Director.

In addition, discharges of hydrant and water line flushing are required to be dechlorinated if they are to be discharged to a portion of the MS4 system that discharges to a small stream. In accordance with the Maine DEP 11/18/2016 Issue Profile for Drinking Water System Discharges to Regulated Small MS4s, the Portland Water District and Maine Water either aerate or dechlorinate during flushing to meet Total Residual Chlorine (TRC) acute water quality criteria as follows:

- Fresh water 19 ug/L (adjusted to 50 ug/L, per the Maine DEP as the reporting limit for available reliable and consistent test methods)
- Marine water 13 ug/L (adjusted to 50 ug/L, per the Maine DEP as the reporting limit for available reliable and consistent test methods)

4.0 IDENTIFICATION OF PRIORITY AREAS

Prior MS4 General Permits required the Town to identify priority areas that need to be protected from illicit discharges. The 2022 MS4 General Permit does not have this requirement, but the Town of Scarborough conducts inspections more frequently than the 2022 MS4 General Permit requires, so they continue to conduct inspections in the priority watershed first. The Town may also use this prioritization for illicit discharge investigations in the event there are insufficient resources to address all potential illicit discharges simultaneously.

To identify areas within the Town that are high priority for illicit discharge inspections, the Town considered impaired waters (i.e., waters that are not meeting their designated classification) as highest priority.

The Town of Scarborough identified Red Brook as the highest priority for the following reasons:

1. It has aquatic life impairments due to habitat conditions, and
2. It has a high level of PCB contamination.

The Town of Scarborough identified the Phillips Brook is the second highest priority for the following reasons:

1. It has aquatic life impairments due to habitat conditions, and

2. The TMDL document has been finalized, which identified that illicit discharges maybe contributing to the impairment.

5.0 PROCEDURES TO LOCATE POTENTIAL ILLICIT DISCHARGES

The Town of Scarborough uses the following methods to locate illicit discharges:

1. Observations during catch basin cleaning
2. Citizen reports of illicit discharge issues
3. Dry weather outfall inspections
4. Outfall sampling and analysis (for flowing outfalls and to identify potential illicit discharge sources)
5. Opportunistic ditch inspections
6. Other opportunistic Inspections

Inspections are completed using Cityworks and the Town's GIS accessed in the field through a tablet. Attachment B contains a copy of the inspection form used in Cityworks.

5.1 Catch Basin Cleaning Inspections

Scarborough splits its catch basin cleaning over a two-year rotating schedule. Catch basins that are located along high traffic routes, such as US Route 1, are cleaned annually. During cleaning an inspection is carried out to determine the fill level of the catch basin. If it is more than 50% full, the catch basin is added to the annual cleaning list. During this inspection process, the employee is also inspecting to assess if any oil, litter, sewage, or other evidence of an illicit discharge is present. If the employee sees any evidence of an illicit discharge, the evidence is documented on the inspection form and provided to the Public Works Deputy Director for further action.

5.2 Citizen Reports of Illicit Discharges

Citizen reports of illicit discharge issues received by phone are routed to the Public Works Department to be investigated. Most phone calls are received at the Public Works Department, but occasionally the public will call or email the Planner or Code Enforcement Officer, who directs the caller to Public Works.

5.3 Dry Weather Outfall Inspections

During previous permit cycles, dry weather outfall inspections were conducted in the highest priority areas identified in Section 4.0 (Red Brook and Phillips Brook) and then expanded to other areas of Town. The Public Works Department began documenting the results of the inspections in Cityworks in the summer of 2015.

The Town attempts to inspect a minimum of 25% of all pipe and ditch outfalls every year, in

accordance with the following:

- Inspections will be performed during periods of dry weather whenever possible;
- Inspections will be performed where they may be done in a safe and efficient manner;
- Inspections will be performed during periods of no or minimal snow cover and prior to the growth of vegetation (or after leaves have fallen) such that outfalls may be easily spotted;
- Observations will include the following at a minimum: observations of sheen, discoloration, foaming, evidence of sanitary sewage, excessive algal growth and similar visual indicators, and detection of odor;
- Photographs may be taken at the time of inspection for either maintenance or illicit discharge documentation;
- MS4 outfalls will be inspected where the Town has safe and legal access to the structure to be inspected;
- When maintenance or potential illicit discharge issues are identified, the Public Works Director will be informed so that he may prioritize the work with other required work for the Town.

5.4 Outfall Sampling and Analysis

Outfall sampling and analysis is required under the 2022 MS4 General permit when an outfall is observed to be flowing during dry weather conditions, whether or not it has exhibited evidence of an illicit discharge.

Outfalls and/or other structures may also be sampled if other evidence of illicit discharges is observed during inspection. The Public Works Director may solicit the assistance of a third-party contractor to collect a sample for field screening depending on the conditions encountered.

A Quality Assurance Project Plan (QAPP) has been developed to provide sampling personnel the information that will assist them in collecting samples, using field equipment and test kits, and obtaining analyses. The QAPP describes the sampling procedures that should be used as well as the analytical methods and field equipment that are appropriate for use in investigating potential illicit discharges and flowing outfalls. The QAPP also provides guidance on interpretation of the results obtained so that investigators can make informed decisions about whether to continue investigating a potential source or whether the results indicate a flowing outfall might be from a natural source. The QAPP is contained in Attachment C to this IDDE Plan.

Wet weather sampling is not required by the MS4 General Permit at this time, but the Public Works Department may choose to conduct wet weather sampling if they suspect a discharge occurs only during wet weather (such as may be the case for failed septic systems).

5.5 Ditch Inspections

The 2022 MS4 General Permit does not require ditch inspections be completed. Ditch inspections were completed by the Public Works Department on all ditches in the summer of 2019. The ditch inspections were completed using a tablet and recorded in the Town's GIS.

Moving forward, the Town will generally inspect ditches for potential illicit discharges whenever maintenance work on ditches is being completed. The Town follows these guidelines in conducting inspections:

- Field inspection will be performed during periods of dry weather when possible.
- Inspections will be performed during periods low flow where field inspections may be performed in a safe and efficient manner.
- Inspections will be performed during periods of no snow cover and prior to the growth of ditch vegetation such that potential outfalls may be easily spotted.
- Evidence of potential illicit discharges will be documented in the IDDE Tracking Sheet.
- If maintenance issues are identified, the Public Works Director will be informed so that he may prioritize the work with other required work for the Town.

5.6 Septic System Inspections

As required by the 2013-2018 MS4 General Permit, by June 30, 2016, the Town developed a list of aging (i.e., greater than 20 years old) septic systems in its two highest priority watersheds (Red Brook and Phillips Brook) that might discharge to the MS4 if they were to fail. In 2014/15 staff assembled a list of sites from the Town Assessor's Office and the Town's GIS that had septic systems older than 20 years in the two priority impaired watersheds, Red Brook and Phillips Brook. In 2015/16 windshield surveys began in Phillips Brook watershed, which included 20 sites. In 2016/17 inspections continued in Phillips Brook, which included an additional 55 sites, as well as the total potential at risk sites within Red Brook watershed, 38 properties.

5.7 Cooperation with other MS4s

Because the Scarborough MS4 infrastructure has interconnections with other MS4s, it may

be necessary to conduct cooperative investigations with other MS4s or to inform them of issues associated with the Scarborough infrastructure. The other MS4 contacts with which Scarborough has interconnections are:

City of South Portland – Fred Dillon, fdillon@southportland.org Ph: 207-347-4138
City of Westbrook – Lynn Leavitt, lleavitt@westbrook.me.us
Town of Cape Elizabeth – Jay Renyolds, jay.reynolds@capeelizabeth.org
Town of Gorham – Matt LaCroix, mlacroix@gorham.me.us
Town of Old Orchard Beach – Joe Cooper, jcooper@oobmaine.com
Maine DOT – Kerem Gungor, Kerem.Gungor@maine.gov Ph: 207-592-3489
Maine Turnpike Authority – Sean Donohue, sdonohue@maineturnpike.com

Documentation of correspondence with interconnected MS4s is contained in Attachment D to this IDDE Plan.

6.0 PROCEDURES TO INVESTIGATE ILLICIT DISCHARGES

Investigations of illicit discharge issues are conducted by the Public Works Department. The Town relies on visual observations of the location where the illicit discharge was reported as a first step in identifying the source of the illicit discharge. If the evidence of the illicit discharge is still present in the initial structure or location where it was reported, the Town uses their knowledge of the infrastructure routing to systematically inspect other structures upstream of the initial location until either the evidence of the illicit discharge is no longer present or until they locate a potential source of the illicit discharge.

For example, if evidence of gray water was observed during catch basin cleaning of a separated storm drain system, the Public Works Department would review as-built drawings and the available GIS and would inspect drain manholes and/or catch basins upstream of the initial observation until they could isolate one or more locations from which the gray water was likely emanating.

In the event visual observations of the structures cannot identify the source of an illicit discharge, the Public Works Director may employ televising, systematic dye testing, or smoke testing to identify the source. The Public Works Director could conduct dye testing but would need to hire a third-party contractor for smoke testing or televising. Sampling and analysis may also be conducted as described in subsection 5.4.

If no source can be located, the area may be re-inspected to assess if the illicit discharge was a one-time occurrence or is a repeating occurrence whereupon additional investigations may be conducted.

7.0 PROCEDURES TO REMOVE ILLICIT DISCHARGES

Once the potential source of the illicit discharge is identified, the Public Works Director would identify and contact the responsible party to initiate removal or discontinuation of the illicit discharge.

If the illicit discharge is caused by a private entity, the Public Works Director may invoke the authority granted him/her under the Non-Storm Water Discharge Ordinance (See section 3.0 of this IDDE Plan). The Public Works Director typically provides initial verbal or email notice to any responsible party then follows up with a Notice of Violation. The Notice of Violation specifies the illicit discharge be removed within 60 calendar days of its source identification but allows that if removal within 60 days is not possible, the responsible party must work with the Public Works Department to establish a schedule to remove the illicit discharge as expeditiously as possible.

If the illicit discharge is caused by the Town, the Public Works Director would contact the department most responsible and work with them to remove or discontinue the illicit discharge within 60 calendar days of identification of the source or would develop a schedule to expedite elimination.

8.0 PROCEDURES TO DOCUMENT ILLICIT DISCHARGES

The Town will document the progress of investigating and removing illicit discharges using an IDDE Tracking Sheet. The spreadsheet is maintained on a Google drive. Each year, the Town is required to complete an annual report summarizing the activities completed under the MS4 Plan. The Public Works Director will print or retain an electronic copy of the IDDE Tracking Sheet for the year as back-up documentation of investigative and removal work completed.

9.0 RECORDS RETENTION

The Public Works Director will retain paper or electronic files of inspections and investigations including laboratory reports, for a minimum of three years after expiration of the MS4 General Permit Term. If the General Permit expires on June 30, 2021, the files may be discarded July 1, 2024.

10.0 REFERENCES

CWP and Robert Pitt 2004. *Illicit Discharge Detection and Elimination Manual* – A Guidance Manual for Plan Development and Technical Assessments. October 2004 Available: http://cfpub1.epa.gov/npdes/stormwater/idde.cfm

Aquarion Engineering Services and Casco Bay Estuary Partnership 2004. *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine.* Available: http://www.thinkbluemaine.org/docs/index.htm

CWP and Robert Pitt 2011 Illicit Discharge Detection and Tracking Guide Available: http://www.cwp.org/2013-04-05-16-15-03/idde

USEPA New England Bacterial Source Tracking Protocol 2012. Provided by USEPA to Integrated Environmental Engineering. Available at https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf

ATTACHMENT A

SCARBOROUGH WATERSHED MAP

ATTACHMENT B

INSPECTION FIELDS AND DOMAINS IN GIS

ATTACHMENT C

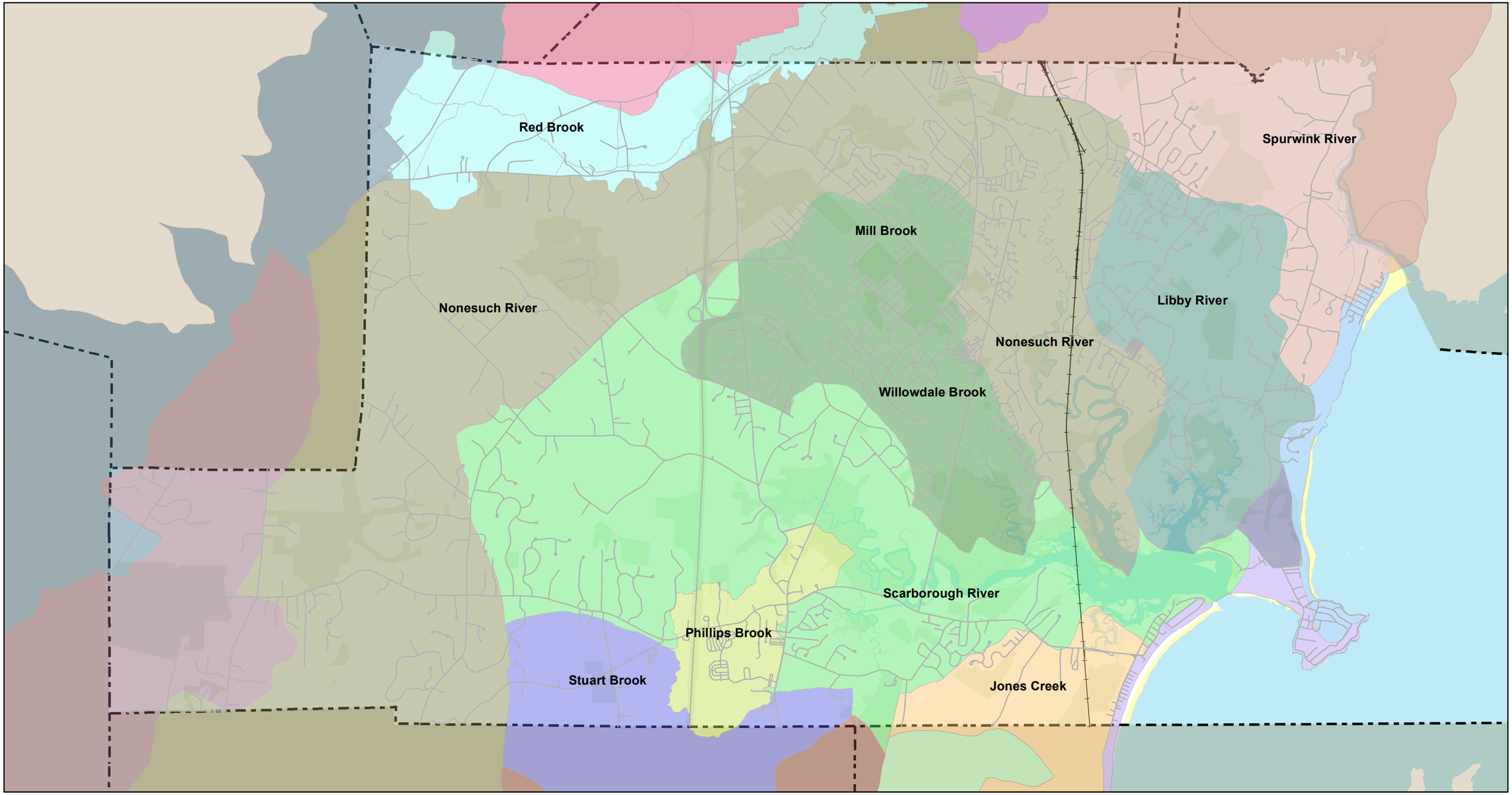
QUALITY ASSURANCE PROJECT PLAN (QAPP)

ATTACHMENT D

COORDINATION LETTERS WITH INTERCONNECTED MS4S

ATTACHMENT A

SCARBOROUGH WATERSHED MAP



Town Of
Scarborough
Maine

scarboroughmaine.org

Disclaimer: The data contained within the Scarborough GIS is intended as a public resource of general information. The Town of Scarborough makes no warranty or representation as to the accuracy, timeliness or completeness of any of the data, and shall assume no liability for the data contained, for omissions, or any decision made or action taken or not taken in reliance upon any of the data. Parcel data is intended for general map reference only and is a general representative of approximate lot configuration, and is not intended for boundary determination, legal description, delineation, or transfer. Any service utility information shown is intended for general information only. Other utilities may be present, and the appropriate utility owner should be contacted for detailed information. GIS data is not intended for engineering design. Field verification is recommended.

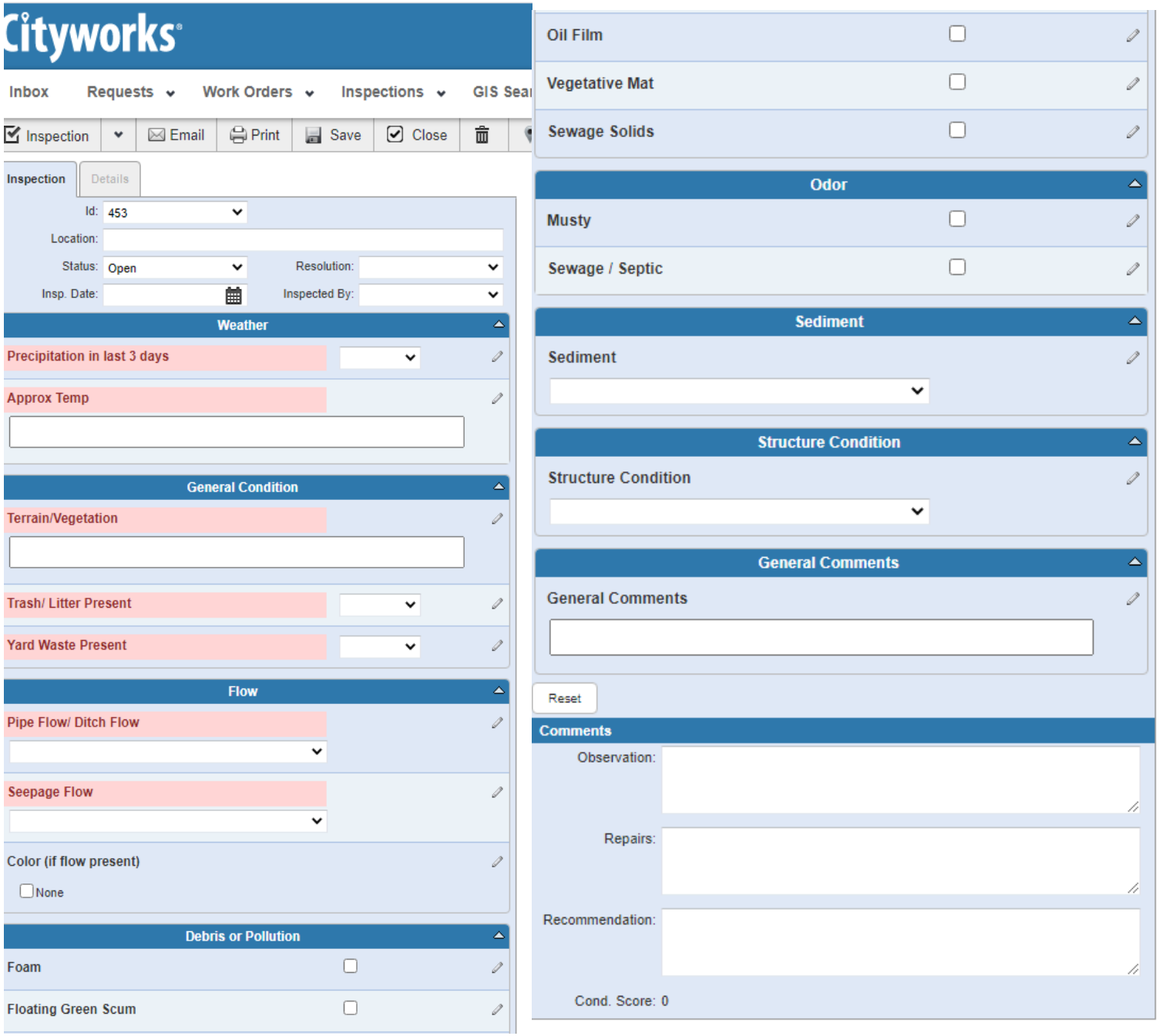
N

Created By: S Buckley
Created Date: March 20, 2021

Watersheds

ATTACHMENT B

INSPECTION FIELDS AND DOMAINS IN GIS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Requests
Work Orders
Inspections
GIS Sear
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Email
Print
Save
Close
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Resolution:
Insp. Date:
Inspected By:
Weather
Precipitation in last 3 days
Approx Temp
General Condition
Terrain/Vegetation
Trash/ Litter Present
Yard Waste Present
Flow
Pipe Flow/ Ditch Flow
Seepage Flow
Color (if flow present)
None
Debris or Pollution
Foam
Floating Green Scum
Oil Film
Vegetative Mat
Sewage Solids
Odor
Musty
Sewage / Septic
Sediment
Sediment
Structure Condition
Structure Condition
General Comments
General Comments
Reset
Comments
Observation:
Repairs:
Recommendation:
Cond. Score: 0

ATTACHMENT C

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Stormwater Monitoring Quality Assurance Project Plan

1.0 Background and Scope

In Maine, there are 30 municipalities (permittees) regulated by the 2022 Maine General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (2022 MS4 General Permit). The MS4 General Permit requires that the municipalities conduct dry weather inspections on 100% of their outfalls during the term of the MS4 General Permit.

Under most conditions, if an outfall is observed to have dry weather flow, monitoring must be conducted to assess whether there is an illicit discharge associated with the flow. (The MS4 General Permit contains a few conditions under which flowing outfalls do not need to be monitored.)

The required monitoring will vary depending on whether or not the outfall's dry weather flow exhibits evidence of an illicit discharge:

- If there is evidence of an illicit discharge present, the permittee must select what parameter(s) they will analyze based on the evidence present:
    a. For potential bacterial sources:
        - E. coli, enterococci, fecal coliform or human bacteroides, and
        - Ammonia, and
        - Optical enhancers or surfactants
    b. For potential chlorine-based sources: total residual or free chlorine
    c. For potential detergent-based sources: optical enhancers or surfactants
    d. For temperature and conductivity where necessary to obtain accurate results.

- If there is no evidence of an illicit discharge present, the permittee must analyze the following:
    - E. coli, enterococci, fecal coliform or human bacteroides, and
    - Ammonia, and
    - Optical enhancers or surfactants, and
    - Total residual or free chlorine, and
    - Temperature and conductivity

> Illicit Discharge means any discharge to a regulated MS4 system that is not composed entirely of stormwater other than:
>
> discharges authorized pursuant to another permit issued pursuant to 38 M.R.S. §413;
> uncontaminated groundwater;
> water from a natural resource [such as a wetland]; or
> other Allowable Non-Stormwater Discharges identified in Part IV(B)(3)(h) of the 2022-2027 MS4 General Permit.

The objective of the monitoring is to collect data that can be used to determine if there is an illicit discharge present in the flow or if the flow is from uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge.

The purpose of this Quality Assurance Project Plan (QAPP) is to provide sampling personnel information that will assist them in collecting samples and analyzing the samples using field equipment/test kit(s) and/or laboratories in a manner that ensures sufficient accuracy and precision so that sampling personnel and regulators can be confident there is or is not an illicit discharge present in dry weather flow from an outfall. This QAPP provides information on several field equipment/test kit(s) and analytical methods available to permittees that can be used to comply with the requirements for dry weather outfall monitoring.

Each municipality is required by the MS4 General Permit to prepare a written Illicit Discharge Detection and Elimination (IDDE) Plan. This QAPP has been developed to be an attachment to a municipality's IDDE Plan, and therefore does not contain all of the IDDE requirements associated with the MS4 General Permit. For example, some communities conduct outfall inspections more frequently than once every 5 years. The IDDE Plan should be consulted to determine the municipality's frequency of inspections. In addition, if there is evidence of an illicit discharge, the municipality must conduct additional investigations to identify the source and work with responsible parties to remove the source. The IDDE Plan describes the processes and procedures specific to a municipality for the subsequent investigations.

2.0 Sampling Procedures

Samples are required to be collected at outfalls that exhibit dry weather flow (defined as flow after there has been no precipitation greater than ¼ inch for 72 hours, and no melt water from snow or ice).

Personnel should be prepared to collect samples during any outfall inspection, because dry weather flow is sometimes intermittent, and if personnel need to return to the site later in the same day, or several days later, the dry weather flow may no longer be present.

Table 1 contains a list of equipment that should be prepared and available in order to conduct dry weather monitoring.

Samples will be collected from a flowing source only (not from stagnant water) and where the pipe outlet has at least 1 or 2 inches of free-flowing drop before any standing water or pool below it. Stagnant water should not be sampled unless the municipality deems it necessary for some reason.

This outfall, though in poor condition because it is cantilevered, provides a good opportunity for a clean catch of its discharge.

This outfall is partially submerged and a clean catch of its discharge is not possible. If tidal influences are strong, wait until low tide to sample. Additional options include: sampling upstream structures or using sand bags around the outfall to prevent contamination from backflow.

Table 1 provides a list of equipment that should be gathered and available for use in the event dry weather outfall monitoring needs to be conducted.

Table 1 Field Equipment for Monitoring

1 Gallon of Distilled or de-ionized water for rinsing
1 Roll Paper towels
3-5 clean plastic 250 ml beakers for water sample collection in Baggie marked "Clean" or disposable "whirl bags"
Garbage bags
1 long sampling pole and or sampling pump and tubing
Equipment to remove and access catch basin covers if needed (pull, hammer, crowbar)
Field equipment/test kits (see Table 2) and bottles for any laboratory samples or off-site field test kits. Ensure field test kits reagents have not expired typically keep bottles for 3-5 samples available
Non-latex gloves
Box of 1-gallon plastic bags
Cooler with ice
Camera or phone
Safety Vest
Steel toed boots, waterproof
scissors
Sun screen and bug spray
Clip board
3-5 Field Data Sheets (See Addendum 1)
Chain of Custody (Addendum 3)
Sharpies and water-proof pens
Packing tape and Duct tape
Sheet of blank labels for bottles
First aid kit
Small white board with pen to mark outfall ID, date, and time in photo

For each outfall sampled, a Field Data Sheet will be used to document the date, time, and location of sample(s) collected, weather conditions, any general observations related to the tests being performed, and results of any parameters analyzed using field equipment or test kits. Note that the Field Data Sheet has a place to document sample observations including odor, color, turbidity,

presence of algae, etc. The observations can be documented in this location instead of, or in addition to, the observations made during the normal outfall inspection (which should be conducted in accordance with the MS4's IDDE Plan or SOP).

Sample bottles that will be taken away from the sampling site for analysis will be labelled with the date, time, and sample location as well as the name of the sampler. Example labels are provided in Addendum 1 along with an example field data collection sheet.

When using a third-party laboratory for any off-site analysis, sample bottles should be obtained before the sampling event. Coordination with the laboratory is also recommended to ensure that sample hold times and preservation requirements are being met. If samples are collected on a Friday, some laboratories need prior notice to meet short hold times. Analytical methods, hold times and other pertinent information is described in Section 3 of this QAPP.

After sampling events, any reusable sample collection containers will be cleaned with soap and water or trisodium phosphate and water. Cleaning will be completed in a location where wash water can be discharged to a licensed wastewater treatment plant, sanitary sewer, or septic system.

3.0 Analyses and Reporting limits

The MS4 General Permit does not require samples to be analyzed using Clean Water Act (CWA) Methods published in 40 Code of Federal Regulations Chapter 136. The use of field equipment test kit(s) and laboratories are both allowed. The MS4 General Permit does not require samples to be analyzed by a laboratory that is certified by the Maine DEP. However, this QAPP specifies that when a commercial laboratory is used for a CWA method, it will be certified by the Maine DEP for the CWA method specified.

Use of a certified laboratory is specified in this QAPP because the data generated by a certified lab would be more likely to stand up in a court of law than data generated by a non-certified lab.

A list of commercial certified laboratories is available on the Maine DEP website at: https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml. Note also that many Wastewater Treatment Plants conduct bacteria analysis for operational purposes. If there is a Wastewater Treatment Plant in the area, it can also be used for the bacteria screening.

This QAPP does not specify CWA methods or Maine DEP certification for use of field equipment/test kit(s).

Table 2 provides information related to sampling parameters, analysis methods, and sample preservation and holding times that may be used during dry weather outfall monitoring. Analysis methods specified in **Table 2** include CWA methods, field equipment, and test kits, where applicable. **Table 2** also provides information on when a given CWA method, field equipment, or test kit might be preferable if there are multiple options for a given parameter.

Prior to sampling, the sampler and Stormwater Manager or Coordinator will determine what analysis method (CWA method, field equipment, or test kit) will be used.

User manual(s) and safety data sheets (SDS) for field equipment and/or test kit(s) that will be utilized for dry weather monitoring are kept in a separate electronic location they are easily accessible to the field personnel who will be conducting the monitoring.

Table 2 Sampling Parameters, Analysis Methods, and Sample Preservation and Holding Times

Parameter for all Potential Illicit Discharges	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
Temperature	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between groundwater and surface water.
Conductivity	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between salt water and fresh water.
Parameter for Potential Bacteria Illicit Discharges	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
Bacteria - E. coli	SM 9223 B (IDEXX Colilert Quanti-Tray) EPA 1603 (membrane filtration, MF) Or SM 9221 B (Most probable number, MPN)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to freshwater (with ammonia and either optical enhancers or surfactants)
Bacteria - enterococcus	SM 9230 B, C or D, (MPN including IDEXX Enterolert, or MF) EPA 1600 (MF)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to salt water (with ammonia and either optical enhancers or surfactants)
Bacteria – Fecal Coliform	SM 9222 D (MF CFU/100ml) Or SM 9221 C, E (Multitube MPN/100ml)	Ice	To lab within 6 hours Analyze within 2	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants)

			hours of receipt		
Bacteria – Human Bacteroides	Labs: EMSL (NJ), Microbial Insights (TN) or Source Molecular (FL) Or Dr. Steve Jones, UNH	Ice	To lab within 24 hours Analyze within 48 hours	1000 ml plastic bottle with sodium thiosulfate from lab (with insulated shipping box)	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants). Not a CWA method, so Maine Laboratory certification not required.
Parameter for Potential Bacteria Illicit Discharges (continued)	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
Surfactants	SM5540C	Ice	To lab within 24 hours Analyze within 48 hours	500 ml plastic bottle from lab	Works on most soaps (laundry detergent, personal care products, dish soap)
Surfactants	CheMetrics K-9400 field test kit (see Maine DEP guidance on handling and disposal in **Addendum 2**)	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Works on most soaps (laundry detergent, personal care products, dish soap). Contains alcohol and chloroform. Generates a Flammable (D001) and Toxic (D022) Hazardous Waste. Do not use test kit in the field unless licensed to transport hazardous wastes. Instructional Video available at: https://www.youtube.com/watch?v=6vwiZgWqa04
Optical brighteners	VWR handheld UV lamp: UV-A: 360-365 nm, model number 89131-488	None	Analyze within 7 days	Unbleached cotton pad wetted with sample placed in sealed baggie	Works only on water with high to moderate laundry detergent. Provides only presence/absence.
Optical brighteners	Maine Healthy Beaches Fluorometer ($15,000 unit)	None	Keep in a dark container, provide to MHB in 1-2	Whirl bag or 100 ml plastic bottle.	Provides semi-quantitative numeric fluorescence of sample. Need to provide sample to MHB in bottle or whirl bag (in a box or cooler). One week hold time. Provide advanced notice to coordinate delivery to office. Organic matter or tannins, or

			days, analyze within 7 days		color will interfere.
Ammonia	Hach Ammonia Test Strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	
Ammonia	Laboratory Method EPA 350.1/350.2	H2SO4 (pH <2) + Ice	28 days	250 ml plastic bottle from lab	
Ammonia	Hach DR300 Pocket Colorimeter Ammonia Nitrogen or LaMotte 3680-01 DC1200 Colorimeter test kit	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Reagent contains Mercury, Generates a Toxic Hazardous Waste (D009) instructional video (10 minutes): https://www.youtube.com/watch?v=hFiEEEAmWFo
Parameter for Potential Chlorine based Illicit Discharges	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
Chlorine	Field kit – Hach Colorimeter II low range	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Instructional video available at: https://www.youtube.com/watch?v=WTTUD0Hq1Vw
Chlorine	Industrial test Systems Ultra-Low Total Chlorine Test Strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	As of 6/2020, USEPA had not used this set of test strips, but the strips can detect to an appropriate lower limit for chlorine.
Parameter for Potential Detergent based Illicit Discharges	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
See Surfactants					
Other Optional	**CWA Method, Field**	**Preservation**	**Holding**	**Bottle needed**	**Notes on Use**

Parameters	Equipment, or Test Kit		time		
Dissolved Oxygen	Hach DO Test kit Model OX-2P	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Waters of the state have Dissolved Oxygen standards. This test can show whether outfall contributions are affecting Dissolved Oxygen content of receiving waters.
Total Phosphorus	EPA 365.3	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	250 ml glass bottle from lab.	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers and eroding soils.
Personal Care Products	EPA 1694	Sulfuric Acid (pH <2) + Ice (4°C)	7 day to extraction 40 days after extraction	1000 ml amber jar	EPA Lab Chelmsford can run if capacity. Contact Todd Borci. Otherwise need to use a commercial laboratory. EPA recommends analyzing only for following subset: Caffeine, 1,7-DMX (metabolite of caffeine), Acetominophen, Carbamazepine (anti-depressant), Primidone (anti-epilepsy drug), Atenolol (high Blood pressure med), Cotinine (metabolite of nicotine), urobilin (by product of hemoglobin breakdowns), Azithromycin (antibiotic)
Total Suspended Solids	EPA 160.2 or SM2549D	Ice	7 days	1000 ml plastic bottle from lab	
Biochemical Oxygen Demand	EPA 405.1 or SM5210B	Ice	To lab within 24 hours, analyze within 48 hours		Provides general water quality information.
Total Petroleum Hydrocarbons DRO and GRO	SW 8015C	Ice	7 Days to extraction 40 days after extraction	500 ml amber glass jar and 3 40 ml VOA containers from lab with sulfuric	DRO is Diesel Range Organics (C10 to C28) GRO is Gasoline Range Organics (C5 to C10)

				acid	
Other Optional Parameters (continued)	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
Nitrate + Nitrite	SM 4500 or EPA 300	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	125 ml plastic bottle from lab	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers, eroding soils or wastewaters.
Total Kjeldahl Nitrogen	SM 4500 or EPA 300	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	1000 ml amber glass bottle from lab	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers, eroding soils or wastewaters.

4.0 Quality Control

The following are the reporting limits required by the MS4 General Permit:

Ammonia: 0.5 mg/L
Surfactants: 0.25 mg/L
Total Residual Chlorine: 0.05 mg/L
E. coli bacteria 4 cfu/100 ml
Enterococcus 10 cfu/100 ml

To ensure the data collected meets the required reporting limits, the MS4 permittee will use either a Maine Certified Laboratory or one of the field equipment/test kit methods listed in **Table 2** to assess dry weather flow.

Each of the test kits listed in **Table 2** has a use range that is appropriate for the work being conducted and which meets the MS4 required reporting limits.

Test kit reagents that have expired will not be used. Test kit and temperature/conductivity probes that have useful life limits will be replaced when they have reached the end of their useful lives.

Maine Certified Laboratories have standard reporting limits for the parameters that conform to the MS4 General Permit required reporting limits.

4.1 Duplicate Samples

To assess the precision of the dry weather flow monitoring, the municipality will collect one duplicate sample for every 10 samples collected. Precision reflects the reproducibility of a given parameter by calculating the Relative Percent Difference (RPD) of the samples. RPD is calculated as follows:

$$RPD = \frac{(X_1 - X_2)\times 100}{(X_1 + X_2)/2}$$

Where X_1 is the concentration of one sample and X_2 is the concentration of the duplicate sample.

Table 3 provides information on the use of duplicate samples and troubleshooting information in the event the duplicate samples results are outside acceptable precision limits. The Precision and Target Relative Percent Differences shown were taken primarily from the Draft USEPA Bacteria Source Tracking Protocol. It is not possible to cover all possible reasons a set of duplicate samples may be outside the precision or Relative Percent Difference targets but the last column of the table lists a few considerations.

Table 3 Sample Precision Goals

Parameter	Precision/ Target Relative Percent Difference	Use of Data when it meets the Precision or RPD	Comments/Troubleshooting if outside Precision or RPD
Temperature	0.1 °C or 0.2 °F	Retain both sets of data.	Because there are no thresholds for additional investigations for this parameter, just retain both

			sets of data and provide any comments that may have affected discrepancy such as age and condition of meter, or if exposure to ambient temperature could have affected temperature of sample.
Specific Conductance	5 uS/cm	Retain both sets of data.	Because there are no thresholds for additional investigations for this parameter, just retain both sets of data and provide any comments that may have affected discrepancy such as age and condition of meter.
Bacteria (E-Coli, Enterococci, or Fecal Coliform)	+/- 100 col/100ml or 30% RPD	Retain both sets of data, use an average of the samples to compare to the investigation thresholds.	Assess cleanliness of equipment used to collect sample. Consider resampling site.
Dissolved Oxygen	0.02 mg/L	Retain both sets of data.	Assess cleanliness of equipment used to collect sample. Consider resampling site.
All other parameters	30% RPD	Retain both sets of data, use an average of the samples to compare to any investigation thresholds.	Assess cleanliness of equipment used to collect sample. Consider resampling site.

4.2 Equipment or Rinsate Blanks

For most instances, dedicated equipment and containers are used to collect samples so that equipment and rinsate blanks are not required to be collected and analyzed. However, if equipment or collection containers are used multiple times in the field for different sample locations, they should be cleaned in between samples. Wash water should be collected in the field and disposed of when returning to office or lab spaces, and equipment or rinsate blanks should be collected and assessed. The USEPA Volunteer Monitor's Guide to Quality Assurance Project Plans has additional information on how to complete these tasks (EPA Document 841-B-96-003).

5.0 Field Data Sheets and Chain of Custody

As described in Sampling Procedures, Field Data Sheets will be used to document sample collection. Field Data Sheets will document the type of field equipment or test kit(s) used and results of any in-situ analysis. Example Field Data Sheets are provided in Addendum 1 to this QAPP.

Whenever samples will be sent to a laboratory for analysis, a Chain of Custody will be used to document sample collection dates, times, analytical methods requested, and custody of the sample from the time it was collected, until the time it was analyzed. Example Chains of Custody are

provided in **Addendum 3** to this QAPP.

6.0 Data Reports

Field data collection sheets shall constitute data reports for analyses using field equipment or test kits.

Whenever samples are sent to a laboratory for analysis, data reports are provided by the laboratory showing the sample location, date and time of collection, results of the analysis, the reporting limit, the person who conducted the analysis, and the analytical method used.

7.0 Data Review and Follow up

Once all data has been received, it will be reviewed by a Stormwater Manager or Coordinator. Data shall also be stored electronically or in paper format for at least three years following the expiration date of the MS4 General Permit, as required by the MS4 General Permit.

If the person collecting the sample is the Stormwater Manager or Coordinator, they may opt to have another municipal staff person review the data, or a Stormwater Manager or Coordinator from another municipality if they deem it necessary to assist in the overall investigation. Data should be reviewed within two weeks of receipt and additional investigations should be implemented to identify the source of any potential illicit discharge if any of the thresholds in **Table 4** are exceeded.

Table 4 Thresholds for Additional Investigation

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
E. coli	236 cfu/100 ml – discharges into freshwater rivers or streams	All classifications of flowing fresh surface water in Maine (AA, A, B and C) have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A fresh surface water is at risk of impairment if it is receiving significant discharges from human sources above this concentration.
E. coli	194 cfu/100 ml – discharges into freshwater ponds	Great Ponds and lakes less than 10 acres have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A water of this type is at risk of impairment if it is receiving significant discharges from human sources above this concentration.
Enterococci	54 CFU/100 ml – discharges into saline/estuarine Class SA or SB	These waters have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A water is at risk of impairment if it is receiving significant discharges from human sources above this concentration. (Note Maine Healthy Beaches threshold is 104 MPN/100 ml)
Enterococci	94 CFU/100 ml – discharges into	These waters have a standard that no more than 10% of the samples may exceed this concentration in any 90 day

	saline/estuarine Class SC	interval. A water is at risk of impairment if it is receiving significant discharges from human sources above this concentration. (Note Maine Healthy Beaches threshold is 104 MPN/100 ml)
Fecal Coliform	61 cfu/100 ml (2 times 31 cfu/100 ml for MF) to 100 cfu/100ml	The low end of this threshold is two times the 90th percentile standards that DMR applies for approved (open) shellfish harvesting areas and is very conservative (90% of the samples collected from the area must be above these concentrations for the harvesting area to remain open and completely unrestricted for shellfish harvesting. See Addendum 2 for additional info from DMR)
Human Bacteroides	Any concentration	Any concentration of human source of sewage should be investigated.
Ammonia	≥ 0.50 mg/L	This is the effective reporting limit of the Ammonia test strips and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol
Chlorine	≥ 0.05 mg/L	Limit of test kit and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Surfactants	≥ 0.25 mg/L	Taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Optical Brighteners	≥ 100 ug/L) (≥ 0.10 mg/L)	This is used by Maine Healthy Beaches as an actionable threshold. If using a handheld fluorometer, conduct further investigation if presence of optical brighteners is detected

MS4s should use the thresholds listed above and the following general guidance to make determinations whether an outfall requires additional investigation for illicit discharges:

Outfalls that have some visual evidence of an illicit discharge and exceed at least one of the above thresholds and should be investigated further using techniques described in the MS4s IDDE Plan.

Outfalls that do not have any visual evidence of an illicit discharge but exceed more than one of the above thresholds should be investigated further using techniques described in the MS4s IDDE Plan

As described in Section 1 of this QAPP, if the above thresholds are not exceeded, the MS4 may make the determination that the flow is from uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge.

Revisions:

1. Original document provided at ISWG Dry weather Outfall Monitoring 10/17/2019.
2. Document updated to include conditions under which dry weather flow is not required, Fecal Coliform thresholds from DMR (Table 4), correct typos including hold times for bacteria samples, incorporate comments from Friends of Casco Bay, Maine DEP Stormwater Program Coordinator and Maine Healthy Beaches Coordinator; provide additional information on coordination with laboratories before sampling, and provide guidance on when to conduct additional investigations, or to determine if flow is from a natural source, groundwater, or an allowed non-stormwater discharge. Dated 11/6/2019
3. Document updated to include requirement for temperature and conductivity (included in 12/6/2020 Public Comment Draft of MS4 General Permit). Dated 4/9/2020
4. Document updated to allow for use of Chlorine Test Strips instead of Hach Test kit, updated DRO/GRO Method to SW 846 8015C (from 8015B), added Sections 4.1 and 4.2 on Duplicate samples and blanks, added Table 3 and renumbered remaining tables. Dated 6/16/2020

Addendums

1. Example Field Data Collection Sheet and labels
2. References:
    a. E-mail on Surfactant field kit handling of residuals from DEP staff
    b. E-mail on Fecal Coliform thresholds from DMR listed in Table 4
3. Example Chains of Custody

Addendum 1
Example Field Data Collection Sheet and labels

Field Data Collection Sheet for Dry Weather Outfall Monitoring

Date		Project Name	
Time			
Sampler's Name		Project Location	
Weather:			
Sample Type:			
Sample Location/Sketch:			

Field Parameters to Monitor

Parameter	Result (units)	Equipment Used	Threshold triggering additional investigation (see QAPP)
Temperature (all flows)	C/F		No threshold. FYI: Temp. is dependent on season. Groundwater is typically 40-55 F. Surface water can be hotter or colder.
Conductivity (all flows)	µs		No threshold. FYI: Groundwater is typ. Less than 1000 µs. Freshwater can be as high as 2000 µs. Saltwater can be as high as 55,000 µs.
Ammonia (potential bacteria sources)	mg/L	Hach Test Strips	≥ 0.50 mg/L
Surfactants or Optical Brighteners (potential bacteria sources)			Surfactants ≥ 0.25 mg/L Optical Brighteners ≥ 100 ug/L or if present
Chlorine (potential chlorine sources)	mg/l	Hach Colorimeter II low range	≥ 0.05 mg/L (test kit limit)

Observations (unless already documented as part of outfall inspection: odor, color, turbidity, algae, etc):_____

Laboratory Analyses (see QAPP for thresholds)

Parameter	Method/ Lab Code	Comments
E. coli	SM 9223 B, EPA 1603, or SM 9221 B	For freshwaters
Enterococci	SM 9230 or EPA 1600	For marine/estuarine waters
Fecal Coliform	SM 9222 D or SM 9221 D, E	For fresh or marine/estuarine waters
Human Bacteriodes	qPCR	For fresh or marine/estuarine waters

Comments/Field Notes

This set of labels was designed to be used with Avery 5366 labels, but you can use any labels.

Sampler: ________________ Date: __________
Time: ________ Field ID: ____________________

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Addendum 2
-Reference E-mails

Kristie Rabasca

From: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>
Sent: Thursday, October 31, 2019 4:46 PM
To: Kristie Rabasca; Wahle, Benjamin
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,
I did misunderstand the question. Unless there is a specific area of concern where we are collaborating on a special study with a town, we typically provide a yearly update for each station's geomean and P90 incorporating the most recent 30 sample scores. That annual trend is provided to towns so we are not usually contacting a town based on any one score to tell them that there might be a problem.

However- if trying to determine a trigger on a single sample, there is some subjectivity to the answer. I would suggest a value between 50-100 as a high value trigger. There is merit to your suggestion of using twice the 31 value as well since that is within that range. Often, our Scientists would use 100 as the high score value as their own flag to watch a station since an area that is already at risk of exceeding the approved standard based on the last 30 samples would likely go over a P90 of 31 with a 100 added. I think you would likely accomplish your goal by using any of the three values; 50, 62, or 100. I would recommend starting with 62 then re-evaluating after some data is built up to determine if that should be increased or decreased based on program needs.

Bryant Lewis
ME Department of Marine Resources
Growing Area West Program Supervisor
194 McKown Point Road
West Boothbay Harbor, ME 04575
Tel: 207-633-9401
Cell: 207-215-4107

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Thursday, October 31, 2019 2:42 PM
To: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>; Wahle, Benjamin <Benjamin.Wahle@maine.gov>
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

H Bryant,
I do a lot of illicit discharge investigations with and for the municipalities. Maybe I did not phrase my question properly.

For a single sample, at what concentration would DMR say to a municipality: "we think there might be a problem here". Is that concentration the 90th percentile number? 31? Or twice that?

Or do you wait until you see the GM or P90 number get close to its threshold for multiple samples?

Kristie L. Rabasca, P.E.
207-415-5830 (cell)

From: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>
Sent: Thursday, October 31, 2019 2:33 PM

To: Kristie Rabasca <krabasca@integratedenv.com>; Wahle, Benjamin <Benjamin.Wahle@maine.gov>
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,
I would suspect DEP and possibly the municipality should be contacted for possible illicit discharges.

We use DMR water quality stations to classify growing area waters. As part of our program, we also conduct surveys of the shoreline where we look for malfunctioning septic systems and other pollution sources and sample the mouths of streams entering growing area waters; however, we do not conduct investigations to determine the sources of contamination. Generally, it is up to the municipality to investigate degrading water quality while sometimes DEP can provide some additional assistance. If there is an area where water quality was degrading we would provide the municipality the information we have if they wished to investigate. The municipality would likely need to do additional work to locate the source of contamination but the information you are describing would likely be valuable in their effort.

Bryant Lewis
ME Department of Marine Resources
Growing Area West Program Supervisor
194 McKown Point Road
West Boothbay Harbor, ME 04575
Tel: 207-633-9401
Cell: 207-215-4107

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Wednesday, October 30, 2019 9:00 AM
To: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>; Wahle, Benjamin <Benjamin.Wahle@maine.gov>
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Thanks so much for this. We are using it because some communities will be sampling outfalls that are discharging into marine environments for fecal coliform as a screening tool when looking for illicit discharges. The MS4 General Permit requires that the communities regulated for their stormwater discharges do sampling whenever an outfall if flowing after three days of dry weather. We are telling them to notify DMR of the results, and wanted to have some guidelines for when they should be concerned. I know that your scores are very conservative because they are all about the FDA and ingestion of shellfish.

I have attached a QAPP that we are using and you will see the table in the back has a "threshold" for additional investigation if the town is monitoring for fecal coliform. Please note that the samples they are collecting are discharges from outfalls into the water body – not from the water body.

Would you investigate further if the thresholds for 90th percentile for open areas were exceeded? Or would you use 2x that? Or some other number.

Hopefully you understand my question….

Kristie L. Rabasca, P.E.
207-415-5830 (cell)

From: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>
Sent: Monday, October 28, 2019 10:16 AM
To: Wahle, Benjamin <Benjamin.Wahle@maine.gov>; Kristie Rabasca <krabasca@integratedenv.com>
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,
This webpage explains the classifications.
https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/howclassified.html

The NSSP Model Ordinance dictates how we calculate water quality scores. A 90th percentile based on the most recent 30 samples providing a score of 31 or less is Approved, 32-163 is Restricted and above 163 is Prohibited. There is a link to the Model Ordinance on our website, if needed. It describes how to calculate scores for systematic random sampling using membrane filtration.
https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/index.html

I have also attached a document summarizing what is in the Model Ordinance for calculating water quality station scores.

Bryant Lewis
ME Department of Marine Resources
Growing Area West Program Supervisor
194 McKown Point Road
West Boothbay Harbor, ME 04575
Tel: 207-633-9401
Cell: 207-215-4107

From: Wahle, Benjamin
Sent: Monday, October 28, 2019 9:28 AM
To: Kristie Rabasca <krabasca@integratedenv.com>
Cc: Lewis, Bryant J <Bryant.J.Lewis@maine.gov>
Subject: RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Hi Kristie,

I'm actually going to refer you to Bryant Lewis, who is the Western Region Growing Area Supervisor. He'll be better able to explain DMR's classification system.

-Ben

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Monday, October 28, 2019 8:03 AM
To: Wahle, Benjamin <Benjamin.Wahle@maine.gov>
Subject: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Good Morning Ben,
I worked with you in Eliot and Cape – and am looking on your website for a simple summary of the P90 concentrations that trigger the various restrictions on shellfishing.

Does such an animal exist? If so, could you share it?

I am working on a QAPP for the stormwater folks and want to provide them with a reference that is accurate and truthed by DMR for when they are sampling outfalls near shellfishing areas.

Thanks for any help you can provide.

DMR uses a membrane filtration (MF) method for fecal coliform analysis using mTEC agar with a two-hour resuscitation step. The geometric mean and the 90th percentile are calculated on a minimum of the most recent 30 data points.

Geometric Mean (Geomean):

The geometric mean, or geomean, is a type of averaging calculation. Unlike a simple average or arithmetic mean, the geomean takes into account the way bacteria grow. During bacterial growth, each bacterium doubles and reproduces itself i.e. one bacterium becomes two, two bacteria become four, four become eight and so on. There are low values at first and the rate of growth increases as the number of colonies increases. This is called exponential growth (Figure 1). This growth pattern means a fecal coliform dataset may have a few high scores and many low scores. The calculation for the geometric mean takes exponential growth into account by transforming the data into logarithms, taking the mean and then converting the number back to a log base 10 number. For example, the arithmetic mean of a fecal coliform score of 300, 150, 23 and 2 CFU/100ml is 119 CFU/100ml. Calculating the geomean, the result is 38 CFU/100ml.

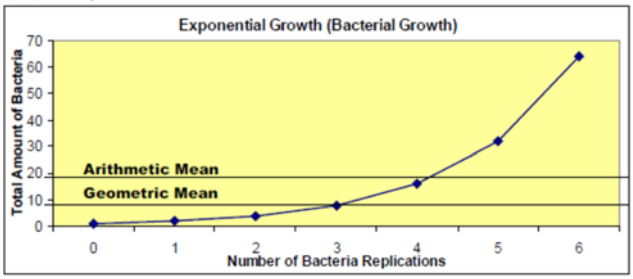
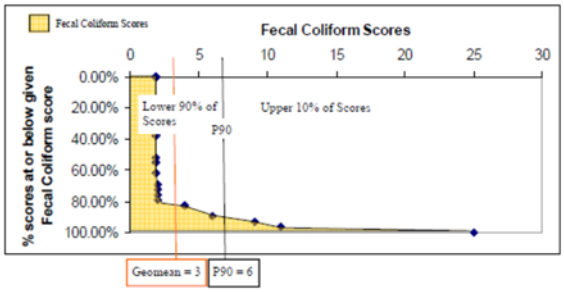


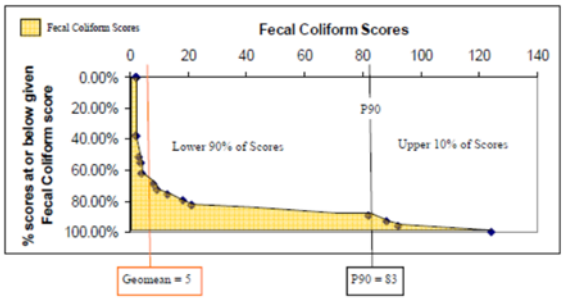
Figure 1. The graph illustrates exponential growth. The arithmetic mean for the scores is 18.1 while the geomean is 8.

90th Percentile (P90)

The other calculation used for shellfish growing area classification is the 90th percentile (P90). The P90 is the variability standard, meaning this value takes into account the variability of test readings. In any test measurement, successive readings of the same sample would produce slightly different scores each time due to precision of the equipment, human error, etc. This type of variability is a factor of the test method and equipment used and is true of all testing methods.

To account for the variability in the fecal coliform test, a standard has been established. Here again, since bacteria grows exponentially, the calculations are performed on a logarithmic scale. The P90 is based on the distribution of fecal coliform scores and means that 90% of scores are at are below the P90 and 10% scores are above (Figures 2a and 2b). As long as most of the other scores are low, a few high scores will not have a large impact on the P90 value. The P90 standard is the acknowledgment by the NSSP that a few high scores in data set may be due to the variability of the test method. If the area shows high fecal coliform scores intermittently due to pollution events such as rainfall, this may cause water quality to exceed the P90 standards because the shellfish are intermittently subject to polluted waters. For classification determinations, P90s are rounded to the nearest whole number. 0.1-0.49 are rounded down and 0.5-0.9 are rounded up to the next whole number.





Figures 2a and b. The lower 90% of the scores fall to the left of the P90 line and 10% of the scores fall to the right. 2a has a low P90 because there are many low scores and a few high scores. 2b has a larger number of high fecal coliform scores, so the P90 is shifted to the right. Although the geomean of 2b passes the approved standard, the area would not be classified as approved because the P90 score is above the threshold.

Fecal Coliform Standards by Shellfish Growing Area Classification Category

Shellfish Growing Area Classification	**Activity Allowed**	**Geometric mean FC/100ml**	**90th Percentile (P90) FC/100ml**
Approved	Harvesting allowed	≤ 14	≤ 31
Conditionally Approved	Harvesting allowed except during specified conditions	≤ 14 in open status	≤ 31 in open status
Restricted	Depuration harvesting or relay only	≤ 88 and >15	≤ 163 and >31
Conditionally Restricted	Depuration harvesting or relay allowed except during specified conditions	≤ 88 in open status	≤ 163 in open status
Prohibited	Aquaculture seed production only	>88	>163

Kristie Rabasca

From: Hudson, Michael S <Michael.S.Hudson@maine.gov>
Sent: Monday, October 7, 2019 11:51 AM
To: Kristie Rabasca
Cc: Plummer, Cherrie F; Poirier, Rhonda
Subject: FW: Proper handling and disposal of CheMetrics Surfactant field test kit residuals
Attachments: surfactants_CHEMetrics_k9400instructs.pdf; surfactants_CHEMetrics_k9400_SDSs.pdf; EIASOP-SWTestKits_REV1.pdf

Importance: High

In response to the questions posed regarding proper handling and disposal of CheMetrics Surfactant field test kit residuals:

1. Can the Towns mix the liquids from a. and b. in a single container for disposal as Doo1 and Do22 waste? Or do they need to keep them separate to dispose of them?
   Answer: Chloroform is miscible in alcohols such as n-propanol and is compatible. The Hazardous Waste Management Rules, 06-096 C.M.R. ch. 850 through 858, do not prohibit the mixing of compatible wastes. If mixed, the waste mixture should be coded as both D001 and D022. The town/generator could check with the licensed hazardous waste transporter it intends to use for the hazardous waste pick-up and disposal to determine if it is advisable or more cost effective to keep the wastes separate.

2. The n-propanol waste is super tough to get out of the vial – we pretty much just dispose of the whole vial. Is that okay? Or can we break the vial? And dispose of the empty glass as solid waste (as long as it is RCRA empty).
   Answer: The whole vials containing n-propanol can be disposed of as hazardous waste. If the generator choses to break the vial to dispose of the n-propanol as hazardous waste and the glass as a solid waste, then the generator must ensure the broken vials are RCRA-empty. Again, the town/generator could check with the licensed hazardous waste transporter it intends to use for the hazardous waste pick-up and disposal to determine if it is advisable or more cost effective to break and empty the vials to dispose of the glass and n-propanol separately. Of course, care and safety measures should be employed if breaking and handling glass vials.

3. Most of these towns are going to be SQGs (Maine Definition), and are going to be generating this waste while they are out in the field over a period of months. Then after each event, they are going to drive it back to the public works facility and set up a SQG haz waste storage area until they can get rid of it (either at HHWD collection, or have a specific pick up). They have 1 year to dispose of it. Have I missed any exemptions or special conditions for this? Is it okay that they are driving it around? Or should they be bringing the water samples back to public works and running the surfactant analysis on it at public works so they don't have to transport it. (its easier for them to run the sample right there while they are at the site).
   Answer: It is preferable for the town/generator to bring samples back from field sites to its Public Works to do the test so that hazardous waste generated by the tests does not have to be transported from field sites. Under the rules, the town/generator would need hazardous waste licenses to transport or accept the hazardous wastes from off-site. Towns should set up a hazardous waste collection container for the hazardous wastes from the tests, with an appropriate size container, labeled as "Hazardous Waste" with an accumulation start date. If the town's Public Works is a Small Quantity Generator (SQG), i.e. it generates for all its hazardous wastes in aggregate no more than 27 gallons/month and accumulates no more than 55 gallon of all of its hazardous waste in aggregate, then the town/generator could accumulate the waste indefinitely until the container of hazardous waste from tests is full at which point the town/generator would have 180 days to ship

via licensed hazardous waste transporter. Town/ Public Works should not dispose of these waste through the Household HW collection programs because they are not household exempt wastes.

4. We are going to do a training of the use of this kit on 10/17 in Portland. I would really like for attendees to be able to practice use of the kit at that training. Do I need to schedule with NRCC or Clean Harbors to come pick up the waste that day (as a licensed transporter), or could one of the communities transport it back to their public works facility for storage until later disposal (during HHWD)?
   Answer: Under the rules, the generator should arrange for waste pick-up at the site of generation. These hazardous wastes are not exempt under the household waste exclusion and are not acceptable at Household Hazardous Waste collections events.

The guidance above is based on the information provided below and the applicable rules, Hazardous Waste Management Rules, 06-096 C.M.R. ch. 850 through 858, without information on the number of test kits expected to be used, frequency of testing and volumes of anticipated waste accumulation If you have questions or would like to discuss the specifics, please feel free to contact me at Michael.s.hudson@maine.gov or 207-287-7884, or Cherrie Plummer of the Hazardous Waste Management Unit. Cherrie's contact is Cherrie.F.Plummer@maine.gov and 207-287-7882.

Michael S. Hudson, Supervisor, Hazardous Waste Management Unit
Maine Department of Environmental Protection
17 State House Station, Augusta, ME 04333-0017
Tel. 207-287-7884
www.maine.gov/dep

From: Poirier, Rhonda
Sent: Monday, October 07, 2019 9:37 AM
To: Hudson, Michael S <Michael.S.Hudson@maine.gov>
Subject: Proper handling and disposal of CheMetrics Surfactant field test kit residuals
Importance: High

Hi Mike,

The sampling she's describing is required by one of the permits in my stormwater program. She is giving a workshop on it on 10/17 and would like to talk to the proper DEP person before that, for planning purposes. Can you help her?

Thank you,
Rhonda

Rhonda Poirier
MEPDES Stormwater Program Manager
Bureau of Water Quality
Maine Department of Environmental Protection
207-592-6233
www.maine.gov/dep

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Tuesday, October 01, 2019 4:02 PM
To: Poirier, Rhonda <Rhonda.Poirier@maine.gov>
Cc: Aimee Mountain (Aimee.Mountain@gza.com) <Aimee.Mountain@gza.com>; Damon Yakovleff <dyakovleff@cumberlandswcd.org>
Subject: Proper handling and disposal of CheMetrics Surfactant field test kit residuals

Hi Rhonda,
Thanks for taking my call.
I am developing a dry weather monitoring training session for the ISWG and SMSWG MS4s, and am developing a QAPP and some checklists.

We will need to use the CheMetrics K-9400 field test kit for surfactants. I have attached the instructions for the kit, and the Safety Data Sheets for the two reagents. Generally for each sample we will do the following:

1. Add 5 ml of water to a small plastic vial
2. Add 4ml of the double tipped reagent (SDS attached and it is flammable and contains 71% chloroform)
3. Shake
4. Use the 0.25 ml sealed glass ampule (which is 98% N-propanol) to draw the organic phase out of the plastic vial with the water and the first reagent.
5. Use colorimeter to check detergent concentration of sample.

So the two wastes we have when done are:

a. The mixture of the 5 ml water and the 4 ml 71% chloroform (which is still flammable) in the plastic vial (minus about 1 ml extracted into the n-propanol vial)
b. About 1 mil of the n-propanol and the chloroform organic phase in a very small glass ampule.

I am requesting the EPA SOP on this – but I do not think it has the detail I want.

When I have used this in the past, I have given it to the municipality where it was generated and told them it was a Doo1 Flammable and D022 Tox-chloroform waste, and they hand it to clean harbors during household hazardous waste day.

We are going to have a lot more people generating this waste – using these kits, and we need to handle it properly. As we provide them with guidance, we want to make sure it is right.

My questions are:

1. Can the Towns mix the liquids from a. and b. in a single container for disposal as Doo1 and Do22 waste? Or do they need to keep them separate to dispose of them?
2. The n-propanol waste is super tough to get out of the vial – we pretty much just dispose of the whole vial. Is that okay? Or can we break the vial? And dispose of the empty glass as solid waste (as long as it is RCRA empty)
3. Most of these towns are going to be SQGs (Maine Definition), and are going to be generating this waste while they are out in the field over a period of months. Then after each event, they are going to drive it back to the public works facility and set up a SQG haz waste storage area until they can get rid of it (either at HHWD collection, or have a specific pick up). They have 1 year to dispose of it. Have I missed any exemptions or special conditions for this? Is it okay that they are driving it around? Or should they be bringing the water samples back to public works and running the surfactant analysis on it at public works so they don't have to transport it. (its easier for them to run the sample right there while they are at the site).
4. We are going to do a training of the use of this kit on 10/17 in Portland. I would really like for attendees to be able to practice use of the kit at that training. Do I need to schedule with NRCC or Clean Harbors to come pick up the waste that day (as a licensed transporter), or could one of the communities transport it back to their public works facility for storage until later disposal (during HHWD)?

So many questions…. Perhaps I could talk with someone at Haz waste…. Thanks for any help you can provide.

Kristie L. Rabasca, P.E
Integrated Environmental Engineering, Inc.
12 Farms Edge Road
Cape Elizabeth, ME 04170
207-415-5830

Addendum 3
Example Chains of Custody

Laboratory Sample Chain of Custody

Client:	Contact:	Phone #:	Email
Address:	City:	State:	Zip Code:
Purchase Order #:	Proj. Name/No.:		Quote #:
Bill (if different than above):	Address:		
Sampler (Print/Sign):			Copies To:

LAB USE ONLY Work Order #:

Remarks:

Shipping Info: FEDEX UPS CLIENT
Airbill No:
Temp C Temp Blank Intact Not Intact

*	Sample Description	Date/Time Collected	Matrix water/soil /other	No. of Containers	Analysis and Container Type Preservatives									
					Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N	Filt. Y / N

COMMENTS:

Relinquished By:	Date/Time	Received By:	Relinquished By:	Date/Time	Received By:
Relinquished By:	Date/Time	Received By:	Relinquished By:	Date/Time	Received By:

ATTACHMENT D

COORDINATION LETTERS WITH INTERCONNECTED MS4S

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Joe Laverriere, PE, City Engineer
City of Saco
15 Phillips Spring Rd
Saco, ME 04072

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Joe:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

In accordance with the MS4 General Permit, the Town developed and implements an Illicit Discharge Detection and Elimination (IDDE) Plan. As a nested or interconnected MS4, we want to make you aware of the Town's IDDE notification system. We will notify you of any illicit discharges in Scarborough that have potential to affect either your MS4 or shared water resources. We respectfully request that you do the same by contacting Scarborough Dispatch at (207) 883-6361 immediately upon discovery of the discharge.

Also, the Town intends to apply for coverage under the 2022 MS4 General Permit. As such, we are preparing our Stormwater Management Plan and updating our IDDE Plan. This letter constitutes notice that we are applying for continued coverage. A formal public notice was also provided in the 2/26/21 issue of the *Portland Press Herald.*

Please forward this letter and/or request to any first responders or other municipal staff who may be in a position to coordinate spill response efforts with Scarborough. Please contact me if you have any questions.

Sincerely,
TOWN OF SCARBOROUGH

AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Joe Cooper, Public Works Director
Town of Old Orchard Beach
103 Smithwheel Rd
Old Orchard Beach, ME 04064

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Joe:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

In accordance with the MS4 General Permit, the Town developed and implements an Illicit Discharge Detection and Elimination (IDDE) Plan. As a nested or interconnected MS4, we want to make you aware of the Town's IDDE notification system. We will notify you of any illicit discharges in Scarborough that have potential to affect either your MS4 or shared water resources. We respectfully request that you do the same by contacting Scarborough Dispatch at (207) 883-6361 immediately upon discovery of the discharge.

Also, the Town intends to apply for coverage under the 2022 MS4 General Permit. As such, we are preparing our Stormwater Management Plan and updating our IDDE Plan. This letter constitutes notice that we are applying for continued coverage. A formal public notice was also provided in the 2/26/21 issue of the *Portland Press Herald.*

Please forward this letter and/or request to any first responders or other municipal staff who may be in a position to coordinate spill response efforts with Scarborough. Please contact me if you have any questions.

Sincerely,
TOWN OF SCARBOROUGH

AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Matt LaCroix, Stormwater Compliance Officer
Town of Gorham
80 Huston Rd
Gorham, ME 04038

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Matt:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

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AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Lynn Leavitt, Sustainability Coordinator
City of Westbrook
371 Saco Street
Westbrook, ME 04092

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Lynn:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

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AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Fred Dillon, Stormwater Coordinator
City of South Portland
929 Highland Ave
South Portland, ME 04106

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Fred:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

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Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Jay Reynolds, Public Works Director
Town of Cape Elizabeth
320 Ocean House Road
Cape Elizabeth, ME 04107

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Jay:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

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AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Kerem Gungor, Stormwater Engineer
MaineDOT
16 State House Station
Augusta, ME 04333

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Kerem:

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TOWN OF SCARBOROUGH

AJ Blanchette

Angela Blanchette, P.E.
Town Engineer

TOWN OF
SCARBOROUGH, MAINE

March 24, 2021

Sean Donohue, Permitting Coordinator/Environmental Liaison
Maine Turnpike Authority
2360 Congress Street
Portland, ME 04102

RE: Interconnected MS4 Coordination for Illicit Discharges

Dear Sean:

As part of the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4), the Town of Scarborough is required to coordinate with neighboring and nested MS4 permittees. The primary aim for this coordination is to ensure that, in the event of a spill or other incident that could result in an illicit discharge crossing into neighboring MS4s, there can be coordination on a spill response to improve the health of Maine's water resources.

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Angela Blanchette, P.E.
Town Engineer

APPENDIX F

CONSTRUCTION INSPECTION FORMS

TIER II: EROSION AND SEDIMENT CONTROL INSPECTION REPORT

PROJECT SITE INFORMATION			
Inspection Date & Time:		Project Name:	
Project Address / Location:		Parcel Id. Number:	
Property Owner:		Owner Contact:	
Inspector:		Inspector Contact:	
Inspection Duration:		Photos Taken:	☐ Y ☐ N
Project in Shoreland Zone[1]:	☐ Y ☐ N	DEP-certified Contractor[1]:	☐ Y ☐ N ☐ N/A
Contractor:		Contractor Contact:	
Current Weather&Temp:		Date & Amount Last Precip:	

INSPECTION DETAILS							
Erosion & Sediment Control Practices[2]	**Inspection Results**						**Comments / Corrective Actions**
ESC Plan Available		Y		N			
Changes to ESC Plan Needed		Y		N			
Contractor ESC Reports Available		Y		N			
O&M Plan Available		Y		N			
Previous Corrective Actions Needed		Y		N			
Perimeter controls in place and in good condition (no sediment leaving site)		Y		N		N/A	
Stockpiles managed properly (no material migration)		Y		N		N/A	
Construction entrances(s) clean and free of tracking onto roadways		Y		N		N/A	
Inlets and outlets of storm drains and culverts stabilized and protected from erosion		Y		N		N/A	
Catch basin inlet protection installed to prevent sediment migration		Y		N		N/A	
Dewatering activities following ESC Plan		Y		N		N/A	
Proper waste management (no trash & debris on site)		Y		N			
Sediment, trash, debris or polluted stormwater observed leaving site[3]		Y		N			
Stormwater BMPs	**Inspection Results**						**Comments / Corrective Actions**
Erosion control in place to prevent sediment accumulation in on-site ponds and filters		Y		N		N/A	
Ponds, filters and other stormwater BMPs installed per plan		Y		N		N/A	
Infiltration areas protected from compaction		Y		N		N/A	
Site Stabilization	**Inspection Results**						**Comments / Corrective Actions**
Disturbed areas minimized		Y		N		N/A	
Areas unworked for > 7 days temporarily stabilized with approved material		Y		N		N/A	
Soils at final grade permanently stabilized with 90% cover of approved material		Y		N		N/A	
Proper slope stabilization (no rill or gully formation)		Y		N		N/A	
Proper dust control measures		Y		N		N/A	
Winter Stabilization (11/1 - 4/15)	**Inspection Results**						**Comments / Corrective Actions**
Site stabilized with appropriate winter stabilization methods after each work day		Y		N		N/A	
Areas within 75 feet of natural resources protected by double row of silt barriers		Y		N	X	N/A	
Mulch applied at 2x standard application rate		Y		N		N/A	
CORRECTIVE ACTIONS NEEDED		Y		N			

TIER II: EROSION AND SEDIMENT CONTROL INSPECTION REPORT

INSPECTION REPORT FINDINGS REVIEWED WITH CONTRACTOR		Y		N			
EXPECTED COMPLETION DATE FOR CORRECTIVE ACTIONS							

*1. Contractor **MUST BE** certified by DEP in Erosion & Sediment Control if working within 250' of a river, coastal or freshwater wetland; or 75' of stream.*
2. Refer to Maine Erosion & Sediment Control Practices Field Guide for Contractors (2014 revision).
3. Non-Stormwater Discharge Ordinance prohibits sediment discharge to MS4 system; MCGP & NRPA prohibit sediment discharge to protected water resources.

ADDITIONAL COMMENTS (including any deviations from ESC plan or recommendations for corrective actions needed):

APPENDIX G

SWPPP INSPECTION FORMS

Scarborough DPW Facility
Quarterly Site Compliance Inspection
Stormwater Pollution Prevention Plan Review

Date: _____
Inspector(s): _____
_____

Outfall #____

Have there been any changes to buildings, yard areas or industrial activities? NO YES
If yes, describe:_____

_____
_____
_____

Have drainage patterns or the storm drain system been modified? NO YES
If yes, describe: _____
_____
_____

Has there been a change in the potential pollutant sources? NO YES
If yes, describe:

Are pollution controls effective in minimizing discharge of pollutants in runoff? NO YES
If no, what controls appear inadequate? _____
_____
_____
_____

What improvements are proposed? _____
_____
_____
_____

Have changes occurred in this drainage area that require modification of the SWPPP? NO YES

Check when changes have been made to SWPPP. _____ date _____ initials

<u>Certification</u>: This Compliance Evaluation Report has been prepared by qualified personnel who properly gathered and evaluated information submitted for this Report. The information in this Report, to the best of my knowledge, is accurate and complete.

Signature: _____
Name Title Date

Scarborough DPW Facility
Stormwater Quarterly Visual Monitoring Form

Date:_____

General weather conditions: _____
Approximate rainfall amount: _____
Time since last rain event (days/hours): _____

Outfall #_____ Time:_____

Estimated flow depth (inches): _____
Characteristics of flow:

Color _____

Odor _____

Turbidity _____

Solids (Floating, Settled, Suspended)_____

Foam _____

Oil Sheen _____

Erosion or Sediment Deposits _____

Other Observations _____

_____

Observations of drainage area and potential pollution sources: _____
_____
_____
_____
_____
_____

Follow-up actions required following inspection: _____
_____
_____
_____
_____

Signature of inspector: _____
Name Title